A Complete Guide to ...

Number

Utilising the objectives as written in

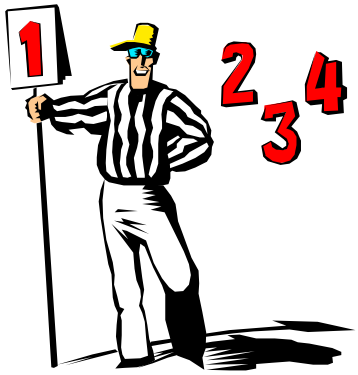
MATHEMATICS in the New Zealand CURRICULUM

for

Level 5

This resource contains:

- ☑ Table of contents
- ☑ Teaching notes
- ☑ In class activity sheets involving
  - ▫ worked examples
  - ▫ basic skills
  - ▫ word problems
  - ▫ problem solving
  - ▫ group work
- ☑ Homework / Assessment activity sheets
- ☑ Answers



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AWS Publications Ltd
Formerly *AWS* Teacher Resources

L5MN

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Note from the author:

This resource ...

*A Complete Guide to Number

is one of a series of **FIVE** resources written utilising the objectives as stated in

Mathematics in the New Zealand Curriculum for Level 5.

With my experiences as a specialist mathematics teacher, I enjoyed mathematics as a subject, but I am aware that not all teachers feel the same way about mathematics. It can be a difficult subject to teach, especially if you are unsure of the content or curriculum and if resources are limited.

This series of resources has been written with you in mind. I am sure you will find this resource easy to use and of benefit to you and your class.

Resources in this series:

A Complete Guide to Number** written utilising the objectives as stated in ***Mathematics in the New Zealand Curriculum for Level 5	**Resource Code: L5MN**
A Complete Guide to Measurement written utilising the objectives as stated in ***Mathematics in the New Zealand Curriculum for Level 5.***	**Resource Code: L5MM**
A Complete Guide to Geometry written utilising the objectives as stated in ***Mathematics in the New Zealand Curriculum for Level 5.***	**Resource Code: L5MG**
A Complete Guide to Algebra written utilising the objectives as stated in ***Mathematics in the New Zealand Curriculum for Level 5.***	**Resource Code: L5MA**
A Complete Guide to Statistics written utilising the objectives as stated in ***Mathematics in the New Zealand Curriculum for Level 5.***	**Resource Code: L5MS**

For more information about these and other resources, please contact ...

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This resource has been divided into EIGHT sections as listed below.

Although there are no page numbers, the sections follow in sequential order as listed.

Note: **'In-class' Worksheets Masters** are lesson by lesson reuseable worksheets that can be photocopied or copied on to an OHP.

Homework / **Assessment Worksheets Masters** can be used as homework to reinforce work covered in class or they can be used for pupil assessment.

Section	
1	**List of Number Objectives:** **Table of 'In-class' Worksheets / Objectives covered**
2	**Table of Contents:** **'In-class' Worksheets**
3	**'In-class' Worksheets Masters**
4	**Teaching Notes / Answers for 'In-class' Worksheets**
5	**Table of Contents:** **Homework / Assessment Worksheets**
6	**Homework / Assessment Worksheets Masters**
7	**Answers for Homework / Assessment Worksheets**
8	**Worksheet tracking sheets for teachers to record pupil names / worksheets covered**

1 Number

The following are the objectives for **Number**, **Level 5**, as written in the **MATHEMATICS** *in the New Zealand Curriculum* document, first published 1992. ***[REFER PAGE 48]***

Exploring number

Within a range of meaningful contexts, students should be able to:

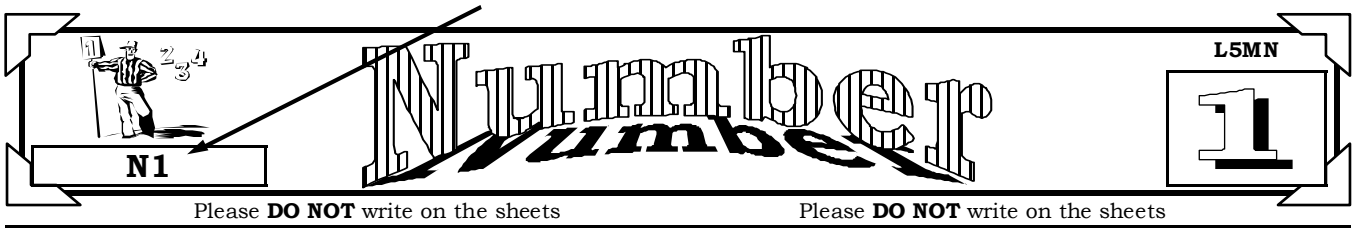
- **N1** convert numbers expressed in standard form to ordinary form, and vice versa;
- **N2** round numbers sensibly;
- **N3** express the values of square roots in approximate and exact forms;

Exploring computation and estimation

Within a range of meaningful contexts, students should be able to:

- **N4** make sensible estimates and check the reasonableness of results;
- **N5** solve practical problems involving decimals and percentages;
- **N6** solve problems involving positive and negative numbers, using practical activities or models if needed;
- **N7** express one quantity as a percentage of another;
- **N8** increase and decrease quantities by given percentages, including mark up, discount, and GST;
- **N9** share quantities in given ratios.

At the top of each **'In-class' worksheet** and **Homework / Assessment worksheet**, the Number objective(s) being covered has been indicated. *EXAMPLE:* **N1** means objective 1, **N2** means objective 2, etc.



Please **DO NOT** write on the sheets Please **DO NOT** write on the sheets

The **Mathematical Processes Skills: Problem Solving**, **Developing Logic & Reasoning**, **Communicating Mathematical Ideas,** are learned and assessed within the context of the more specific knowledge and skills of number, measurement, geometry, algebra and statistics. The following are the **Mathematical Processes Objectives** for **Level 5**.

Problem Solving Achievement Objectives ***[Refer page 24]***

- **MP1** pose questions for mathematical exploration;
- **MP2** effectively plan mathematical exploration;
- **MP3** devise and use problem-solving strategies to explore situations mathematically;
- **MP4** find, and use with justification, a mathematical model as a problem-solving strategy;
- **MP6** use equipment appropriately when exploring mathematical ideas.

Developing Logic and Reasoning Achievement Objectives ***[Refer page 26]***

- **MP8** classify objects, numbers and ideas;
- **MP9** interpret information and results in context;
- **MP10** make conjectures in a mathematical context;
- **MP11** generalise mathematical ideas and conjectures;
- **MP15** use words and symbols to describe and generalise patterns.

Communicating Mathematical Ideas Achievement Objectives ***[Refer page 28]***

- **MP16** use their own language and mathematical language and diagrams to explain mathematical ideas;
- **MP17** devise and follow a set of instructions to carry out a mathematical activity;
- **MP20** record information in ways that are helpful for drawing conclusions and making generalisations;
- **MP21** report the results of mathematical explorations concisely and coherently.

Note:
The codes **MP1**, **MP2**, etc. have been created by numbering the **Mathematical Processes Achievement Objectives** in order as listed in the **MATHEMATICS** *in the New Zealand Curriculum* document. The numbering gaps occur as not all objectives are covered at **Level 5**. ***[REFER TO PAGES 23 - 29 OF THE CURRICULUM DOCUMENT]***

‘In-class’ Number Worksheets
Table of Worksheet Number / Objectives Covered

See the opposite page for details of each objective.

	Number Objectives										Mathematical Processes Objectives												
Worksheet Number	R	N 1	N 2	N 3	N 4	N 5	N 6	N 7	N 8	N 9	MP 1	MP 2	MP 3	MP 4	MP 6	MP 8	MP 9	MP 10	MP 11	MP 15	MP 16	MP 17	MP 20	MP 21
1	✖																✖							
2	✖										✖		✖				✖							
3	✖										✖		✖				✖							
4	✖										✖		✖				✖							✖
5	✖										✖		✖				✖					✖		
6		✖									✖		✖				✖					✖		
7			✖		✖						✖		✖				✖					✖		
8			✖		✖						✖		✖				✖					✖		
9			✖	✖	✖								✖				✖							
10	✖												✖				✖					✖		
11	✖												✖				✖					✖		
12						✖					✖		✖				✖					✖		
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14							✖				✖		✖				✖							
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18									✖		✖		✖				✖					✖		
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20										✖	✖		✖				✖					✖		
21											✖		✖				✖					✖		
22										✖	✖		✖				✖					✖		

Table of Contents for the 'In-class' Worksheet Masters for Number, Level 5

Revision

Number 1

Please **DO NOT** write on the sheets

Please **DO NOT** write on the sheets

Adding and subtracting whole numbers:

The ability to add and subtract with speed and accuracy is a useful skill.
Setting out is important, especially when a calculator is not being used.

Example: 6231 + 736 could be written as ...

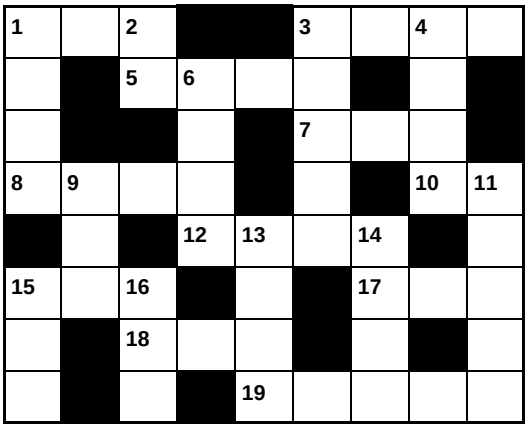
$$\begin{array}{r} 6231 \\ +\ 736 \\ \hline \\ \hline \end{array}$$

and 2018 – 437 could be written as ...

$$\begin{array}{r} 2018 \\ -\ 437 \\ \hline \\ \hline \end{array}$$

Task 1

1. **Copy** this 'number cross' into the squares of your maths book.
2. Use the clues for **across** and **down** to complete the number cross by working out these addition and subtraction problems.



Clues across

1. 532 + 294
3. 2335 – 485
5. 8020 – 475
7. 1542 – 749
8. 497 + 1735
10. 300 - 203
12. 4037 – 1528
15. 247 + 516
17. 1000 – 436
18. 345 + 567
19. 100000 – 7959

Clues down

1. 5243 + 2919
2. 400 – 333
3. 7523 + 8227
4. 10000 – 4261
6. 1689 + 4233
9. 514 – 218
11. 34905 + 37546
13. 8000 – 2571
14. 4127 + 5443
15. 269 + 446
16. 700 – 306

Multiplying and dividing whole numbers:

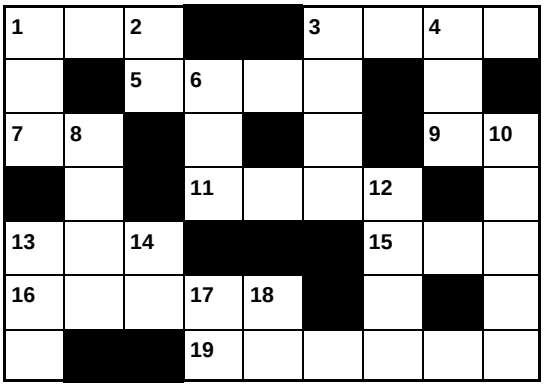
The ability to multiply and divide with speed and accuracy is also a useful skill.
Setting out is important, to help avoid making mistakes.

Example: 294 × 23 could be written as ...

$$\begin{array}{r} 294 \\ \times\ 23 \\ \hline \\ \hline \end{array}$$

and 6412 ÷ 4 could be written as ... $4\overline{)6412}$

Task 2



1. **Copy** this **number cross** into the squares of your maths book.
2. Use the clues for **across** and **down** to complete the number cross by working out these multiplication and division problems.

Clues across

1. 259 × 3
3. 197 × 9
5. 9638 ÷ 2
7. 392 ÷ 7
9. 540 ÷ 12
11. 1209 × 5
13. 1914 ÷ 6
15. 1500 ÷ 12
16. 4625 × 7
19. 85418 × 5

Clues down

1. 3575 ÷ 5
2. 444 ÷ 6
3. 319 × 6
4. 93 × 8
6. 2568 ÷ 3
8. 592 × 11
10. 4210 × 12
12. 46260 ÷ 9
13. 48 × 7
14. 1116 ÷ 12
17. 518 ÷ 7
18. 780 ÷ 15

Task 3

Create an **Addition & Subtraction** number-cross and a **Multiplication & Division** number-cross as above, including clues and answers. Exchange each number-cross with a classmate and compare answers when completed.

Special numbers:

"Is the number 7 a prime number?" asked Tracy.

"Can you list the first five multiples of 9?" asked Rangi.

"Can you list the factors of 15?" asked Abby.

Prime numbers, **multiples**, **factors** and **prime factors** are all special types of numbers.

Discuss what makes these numbers special.

Task 4

Copy each sentence below about these special numbers, replacing the ♠ with one of the words listed below.

1. A ♠ number can only be divided by two numbers, itself and 1.
2. The ♠ of a number are found by multiplying the number by 1, 2, 3, 4, 5, etc and recording the answers.
3. A ♠ of a given number is a whole number that divides exactly into the given number. There is no remainder.
4. A ♠ is a factor that is a prime number.

factor
multiples
prime
prime factor

Working with **prime numbers**.

5. **List** the first 15 prime numbers.
6. **List** the prime numbers between 70 and 90.
7. Which numbers in this list are prime numbers? 3, 9, 12, 13, 19, 21, 25, 29, 33, 37, 43, 49, 53, 81, 93

The number 12 can be written as two prime numbers. *Example:* 5 + 7 = 12.
Write these numbers as **two prime numbers**. There may be more than one correct answer for each.

8.	18	9.	24	10.	30	11.	36	12.	42	13.	44
14.	48	15.	50	16.	54	17.	60	18.	66	19.	70

Working with **multiples**.

List the first 10 multiples of these numbers.

20.	7	21.	12	22.	14	23.	17	24.	20	25.	30

26. **List** the multiples of 9 that are less than 50.
27. **List** the multiples of 11 that are between 40 and 80.
28. **List** the multiples of 15 that are between 50 and 100.
29. **List** the multiples of 18 that are between 40 and 110.
30. **List** the multiples of 25 that are between 80 and 160.

Working with **factors**.

List the factors of these numbers.

31.	12	32.	20	33.	36	34.	48	35.	66	36.	72

The number 14 can be written as two prime factors. *Example:* 2 × 7 = 14
Write these numbers as **two prime factors**.

37.	15	38.	39	39.	55	40.	91	41.	119	42.	143

Task 5

Guess the number game: **Read** the clues in the box below and then work out the number.

1. I am an odd number.
I am greater than 40,
but less than 70.
I am a multiple of 11.
What number am I?

2. I am an even number.
I am greater than 35,
but less than 70.
I am a multiple of 13.
What number am I?

3. I am an odd number,
I am a factor of 30,
I am greater than 5,
but less than 40.
I am a multiple of 5.
What number am I?

4. **Create** 5 similar 'Guess the number' questions, where there is only one correct answer.
Exchange your questions with a classmate.

Order of operations:

When working out answers with questions involving a mixture of operations, the order in which they are done will affect the answer. The letters **BODMAS** or **BEDMAS** will hlep you to remember the order.

B = brackets
O = of (**E** = exponents)
D = division
M = multiplication
A = addition
S = subtraction

This order means that you work out the **brackets first**, followed by ...

multiplying and **dividing** in the order they appear from left to right, followed by ...

adding or **subracting** in the order they appear from left to right.

Examples:

$7 \times 8 + 11$
$= 56 + 11$
$= 67$

$19 + 5 \times 4$
$= 19 + 20$
$= 39$

$72 \div 8 - 5$
$= 9 - 5$
$= 4$

$40 - 36 \div 3$
$= 40 - 12$
$= 28$

Task 6

Calculate the following.

1.	$9 \times 8 + 23$	2.	$10 \times 8 - 43$	3.	$25 + 9 \times 8$	4.	$40 \div 8 + 15$
5.	$65 \div 5 - 9$	6.	$5 \times 12 + 27$	7.	$19 + 54 \div 6$	8.	$67 - 12 \times 4$
9.	$59 - 7 \times 6$	10.	$84 \div 12 + 27$	11.	$4 \times 12 + 18$	12.	$24 + 63 \div 7$
13.	$112 \div 7 + 24$	14.	$13 \times 4 + 19$	15.	$27 + 63 \div 9$	16.	$57 - 13 \times 3$
17.	$12 \times 9 - 59$	18.	$160 \div 8 + 17$	19.	$12 \times 11 - 77$	20.	$12 \times 7 + 46$
21.	$46 + 99 \div 11$	22.	$91 - 12 \times 6$	23.	$13 \times 5 + 38$	24.	$144 \div 12 + 37$
25.	$95 \div 5 - 11$	26.	$87 - 7 \times 9$	27.	$10 \times 9 + 43$	28.	$102 \div 3 - 27$
29.	$53 - 6 \times 7 + 24$	30.	$47 + 36 \div 3 + 24$	31.	$29 + 9 \times 7 - 57$	32.	$24 + 52 \div 13 - 17$
33.	$9 \times 8 \div 6 + 37$	34.	$55 \div 5 \times 7 - 19$	35.	$29 + 9 \times 4 \div 12$	36.	$81 - 32 \div 8 \times 12$
37.	$12 \times 8 - 9 \times 7$	38.	$8 \times 5 + 21 \div 3$	39.	$7 \times 13 - 9 \times 9$	40.	$35 \div 7 + 3 \times 15$

Problems involving brackets.

Example: $4(6 + 4)$ means $4 \times (6 + 4) = 4 \times 10 = 40$
$6(24 - 3 \times 7) = 6(24 - 21) = 6 \times 3 = 18$

Use **order of operation** rules to work out the answers for these questions involving brackets.

41.	$3(5 \times 4 + 5)$	42.	$5(6 \times 6 - 19)$	43.	$6(29 - 4 \times 6)$	44.	$5(36 \div 9 + 9)$
45.	$6(55 \div 5 - 7)$	46.	$7(8 \times 4 + 9)$	47.	$4(30 \div 6 + 11)$	48.	$9(58 - 7 \times 6)$
49.	$4(6 \times 6 - 19)$	50.	$6(36 - 3 \times 9)$	51.	$15(36 \div 9 + 6)$	52.	$8(6 \times 3 + 7)$
53.	$40 - 3(18 \div 3 + 2)$	54.	$15 + 3(2 \times 8 + 4)$	55.	$11 + 2(19 - 2 \times 7)$	56.	$50 - 4(5 + 20 \div 4)$
57.	$17 + 2(27 - 3 \times 8)$	58.	$40 - 3(18 \div 3 + 2)$	59.	$54 - 6(3 \times 8 - 18)$	60.	$13 + 9(27 - 3 \times 8)$

Copy and **complete** each statement by **replacing** the ◆ with +, −, × or ÷ to make each statement true.

61.	$2 \blacklozenge 3 \blacklozenge 5 = 17$	62.	$5 \blacklozenge 3 \blacklozenge 6 = 21$	63.	$10 \blacklozenge 4 \blacklozenge 2 = 8$	64.	$12 \blacklozenge 3 \blacklozenge 7 = 28$
65.	$9 \blacklozenge 10 \blacklozenge 2 = 14$	66.	$23 \blacklozenge 4 \blacklozenge 5 = 3$	67.	$18 \blacklozenge 6 \blacklozenge 9 = 12$	68.	$8 \blacklozenge 3 \blacklozenge 7 = 31$
69.	$21 \blacklozenge 18 \blacklozenge 3 = 15$	70.	$27 \blacklozenge 9 \blacklozenge 7 = 10$	71.	$7 \blacklozenge 4 \blacklozenge 6 = 31$	72.	$19 \blacklozenge 36 \blacklozenge 12 = 16$

73. **Create** 10 questions as above, where the operation signs are missing.
Exchange your questions with a classmate and have him / her add signs to make each statement true.

Word problems involving order of operations:

Example: Sharon went to the shop bought five C.D.'s worth $19.95 each and two tapes worth $11.50 each.
Write an **expression** for this information, then **calculate** the total cost of this purchase.

Answer: Total cost of purchase = 5 × $19.95 + 2 × $11.50 = $99.75 + $23.00 = $122.75

Task 7

Calculate the cost of buying the follwoing number of C.D.'s and tapes.

1.	2 C.D.'s & 3 tapes	2.	4 C.D.'s & 2 tapes	3.	1 C.D. & 6 tapes
4.	5 C.D.'s & 7 tapes	5.	3 C.D.'s & 10 tapes	6.	6 C.D.'s & 4 tapes
7.	9 C.D.'s & 1 tape	8.	7 C.D.'s & 5 tapes	9.	10 C.D.'s & 8 tapes

10. If Karen has $90.00, how many C.D.'s can she buy?
11. If John has $60.00 and buys 3 tapes, how much change does he get?
12. If Rebecca has $100 and buys 2 C.D's and 4 tapes, how much change does she get?

Prices
C.D.'s
$17.50 each
Tapes
$10.50 each

13. Use the information below to **calculate** the cost of each shopping list A to H.

broccoli
$4.95 / kg

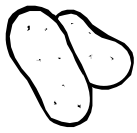
corn cobs
3 for 75 cents

carrots
$1.80 / kg

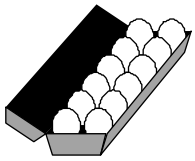
bananas
$2.10 / kg

beans
$2.90 / kg

mushrooms
$7.90 / kg

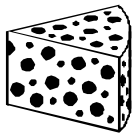


potatoes
$3.00 / 3kg bag



eggs
$2.55 / doz

cereal
$4.35 / box



cheese
$5.40 / 1kg block

List A
2kgs of carrots
12 corn cobs
1 dozen eggs
1kg of mushrooms
1kg block of cheese
2kgs of beans

List B
1kg of broccoli
6kgs of potatoes
1kg of beans
1½kgs of bananas
2 boxes of cereal
6 corn cobs

List C
2kgs of carrots
1kg of broccoli
15 corn cobs
1kg of mushrooms
2kgs of bananas
6kgs of potatoes

List D
2 dozen eggs
1kg of mushrooms
6kgs of potatoes
2kgs of beans
3kgs of cheese
2 boxes of cereal

List E
2kg of broccoli
2kgs of cheese
2 boxes of cereal
1 dozen eggs
4kgs of carrots
12 corn cobs
12kgs of potatoes

List F
2kgs of beans
½kg of mushrooms
9kgs of potatoes
2kgs of cheese
1½kgs of bananas
6 corn cobs
1 dozen eggs

List G
4kgs of carrots
1½kgs of broccoli
12kgs of potatoes
1 dozen eggs
2kgs of cheese
3kgs of beans
9 corn cobs

List H
2kgs of mushrooms
1½kgs of beans
3kgs of bananas
15 corn cobs
6kgs of potatoes
2kgs of cheese
3kgs of carrots

Multiplying and dividing by powers of 10:

Some of the **powers of 10** and the numbers they represent are listed below.

$10^1 = 10,\ 10^2 = 100,\ 10^3 = 1000,\ 10^4 = 10000$

To multiply by the powers of 10 is not as difficult as it might seem.

Examples: $3.7 \times 10000 = 37000,\ 78.3 \times 100 = 7830,\ 236.9 \div 100 = 2.369,\ 1.2 \div 1000 = 0.0012$

In each example, the digits have remained the same, but the decimal point has moved.

Task 8

Calculate the following.

1.	6.9×10	2.	2.3×10000	3.	84×100	4.	0.6×1000
5.	2.3×100	6.	4.09×1000	7.	94.3×1000	8.	8.05×10000
9.	963×1000	10.	0.08×100	11.	3.84×100000	12.	0.059×100
13.	3.7×10^5	14.	6.7×10^4	15.	4.3×10^7	16.	5.2×10^5

17. **Look** at the answers for the questions above involving multiplication. Can you **describe** a simple method for working out the answers without having to actually do the calculation?

Calculate the following.

18.	$9.6 \div 100$	19.	$1.3 \div 1000$	20.	$63 \div 100000$	21.	$934 \div 1000$
22.	$4.1 \div 10$	23.	$4.37 \div 100$	24.	$672.8 \div 100$	25.	$18.63 \div 10000$
26.	$952 \div 1000$	27.	$0.85 \div 100000$	28.	$4.09 \div 1000$	29.	$0.096 \div 10$
30.	$7.6 \div 10^5$	31.	$6.9 \div 10^3$	32.	$6.3 \div 10^6$	33.	$2.5 \div 10^3$

34. **Look** at the answers for the questions above involving division. Can you **describe** a simple method for working out the answers without having to actually do the calculation?

Use your methods described above to answer these questions.

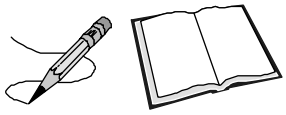
35.	2.59×10^4	36.	$4.37 \div 10^3$	37.	7.21×10^6	38.	$6.074 \div 10^3$
39.	$9.07 \div 10^5$	40.	7.361×10^7	41.	$5.42 \div 10^5$	42.	4.021×10^6

Seats in an ice hockey stadium are in rows of 100 seats.

43. **Calculate** the number of seats in 36 rows.

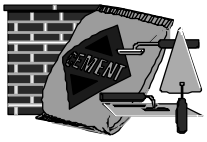
44. How many rows of seats are filled if 1275 tickets have been sold for Saturday's game?

A school sells pens and note books to its pupils.



45. **Calculate** the cost of buying 100 pencils at 18 cents each.

46. If 1000 school note books cost \$540.00, what would it cost to buy one note book?



A brick fence is to be built using 100000 bricks.

47. **Calculate** the cost of the bricks, if each brick costs 19 cents.

48. If 10000 bricks cost \$2300.00, **calculate** the cost of one brick.

A national supermarket chain sold about 100000 1L cartons of milk during the year.

49. If milk sells for \$1.25 per 1L carton, what is the total value of milk sales for the year?

The supermarket also sold 10000 cartons of flavoured milk, for total sales of \$16500.

50. What was the cost of the each carton of flavoured milk?

A local power company sells power at a rate of 12.330 cents per unit.

51. **Calculate** the cost (\$) if 100000 units of power have been used.

52. After a price increase, 10000 units of power cost \$1275. What is the new price per unit for the power?

Standard form ⇔ decimal form:

A number such as 1.2×10^3 is said to be written in standard form.
Numbers written in **standard form** consist of two parts,
a decimal number and a power of 10.

The decimal number ALWAYS has just one non-zero digit before the decimal point.
Such as, 2.3, 5.35, 8.369, etc.

Example: 1.2×10^3

The decimal number is multiplied by a power of 10.
Such as , 10^1, 10^2, 10^3, 10^{-3} etc.

Write these standard form numbers as decimal numbers.
3.6×10^3, 6.86×10^5, 8.6×10^{-3}, & 9.347×10^{-5}.

Answers: $3.6 \times 1000 = 3600$, $6.86 \times 100000 = 686000$,
$8.6 \times 0.001 = 0.0086$, $9.347 \times 0.00001 = 0.00009347$

Task 9

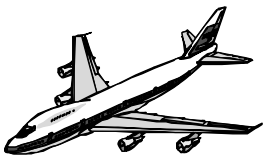
Convert these standard form numbers to decimal or whole numbers.

1.	9.0×10^2	2.	6.0×10^{-2}	3.	5.3×10^4	4.	6.6×10^{-3}
5.	2.7×10^{-3}	6.	9.3×10^5	7.	1.9×10^{-3}	8.	2.4×10^5
9.	3.24×10^3	10.	1.93×10^{-4}	11.	3.47×10^5	12.	9.12×10^{-3}
13.	7.63×10^{-6}	14.	5.34×10^5	15.	9.04×10^{-4}	16.	7.35×10^5
17.	9.4×10^{-4}	18.	3.06×10^{-3}	19.	1.26×10^6	20.	3.93×10^{-4}
21.	3.101×10^5	22.	6.327×10^{-4}	23.	4.106×10^{-5}	24.	6.318×10^5

Convert these decimal or whole numbers to standard form numbers.

25.	2500	26.	0.042	27.	42500	28.	0.0056
29.	584000	30.	2351	31.	0.00034	32.	63150000
33.	586.2	34.	0.0000254	35.	956.63	36.	0.000039
37.	0.0000045	38.	85620000	39.	0.004126	40.	9635.45
41.	952300000	42.	0.00002105	43.	0.00000931	44.	37920.68
45.	0.00003625	46.	30049500	47.	120450400	48.	0.0000000069

49. **Calculate** the number of seconds in 1 day, 1 week and 1 year. Convert your answers to standard form.



50. An aeroplane has travelled approximately 3.5×10^5 km in the past 6 months. **Convert** this distance to an ordinary number.

An aeroplane makes 3 return trips daily between two cities that are 850km apart.

51. **Calculate** the distance the plane travels in 1 day, 1 week and 1 year. **Convert** your answers to standard form.

At a milk treatment plant, one litre containers of milk are filled at a rate of 120 per hour.

52. **Calculate** the number of containers filled in 12 hours.
53. If the milk treatment plant operates 12 hours a day for five days a week, how many litres of milk would be produced in a 4 week period? **Convert** your answer to standard form.
54. In 50 hours of production, 6.5×10^3 1L containers of milk were produced. What was the hourly rate of production?

55. If 2.315×10^5 Christmas cards were posted in 5 days, what is the average number of Christmas cards posted each day?
56. At a local Post Office, an average of 1250 letters are posted each week of the year. **Calculate** the number of letters posted in one year. **Convert** your answer to standard form

Approximations, estimations & rounding using decimal places:

When calculating or taking measurements, approximations can be used. One way to approximate a number is to round it off to a certain number of **decimal places (d.p.)**.

Example: 5.32 = 5.3 rounded to 1 decimal place, 5.329 = 5.33 (2 d.p.)

Round 9.65 to 1 d.p. Answer: 9.7 (1 d.p.)

When rounding a number to a certain number of decimal places, count the required digits from the decimal point. If the next number is 5 or above, add 1 to the last digit. If the next digit is below 5, leave it as it is.

Task 10

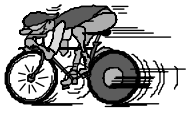
Round each number to **1 decimal place** (1 d.p.), **2 decimal places** (2 d.p.) and **3 decimal places** (3 d.p.)

1.	1.2364	2.	3.6041	3.	9.7532	4.	10.6347	5.	0.05643
6.	23.5067	7.	18.4629	8.	53.4219	9.	143.8891	10.	6.3851
11.	0.09578	12.	9.2596	13.	186.0709	14.	1.0006	15.	56.7561
16.	5602.7034	17.	0.05295	18.	6.40932	19.	67.1596	20.	0.9637
21.	2.71999	22.	9058.0975	23.	0.008694	24.	9.46209	25.	702.96420
26.	0.000529	27.	4.6009	28.	0.9999	29.	56	30.	132

Work out each question then **round** your answers to **1 d.p.** and **2 d.p.**

31.	19.953 + 4.485	32.	75.032 – 49.966	33.	2.53 × 1.2	34.	45.5 ÷ 9
35.	36.8 ÷ 7	36.	0.9 × 4.986	37.	3.039 + 12.968	38.	10.969 – 3.854
39.	23.689 + 4.485	40.	63.7 ÷ 9	41.	120.635 – 89.966	42.	6.742 × 1.2
43.	23.6 + 1.03 × 3.4	44.	5.32 × 1.2 + 9.564	45.	1.95 + 2.65 ÷ 4	46.	15.6 ÷ 8 + 4.906
47.	16 – 39.1 ÷ 8	48.	42.63 ÷ 6 + 2.98	49.	8.3 – 3.05 × 0.9	50.	3.8 × 2.34 – 2.499
51.	3.64 + 9.25 ÷ 8	52.	27.561 ÷ 5 – 1.94	53.	6.74 × 2.2 + 6.37	54.	26.3 – 64.404 ÷ 12

In a 1km track cycle race, the top 10 competitors' times were recorded in seconds to 3 decimal places.



68.237, 71.632, 69.048, 75.396, 71.284, 68.956, 70.653, 69.378, 72.564, 69.637

55. List these times in order of fastest to slowest.

56. **Round** each time to 2 d.p.

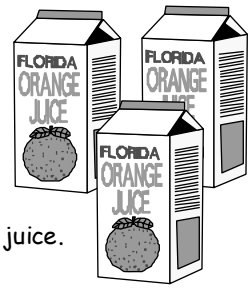
In a computer car racing game, the top 10 fastest lap times were as follows ...

1 min 56.35 sec, 1 min 45.72 sec,1 min 63.79 sec,1 min 50.27 sec,1 min 49.93 sec,
1 min 49.76 sec, 1 min 51.63 sec, 1 min 52.09 sec, 1 min 48.74 sec, 1 min 51.95 sec

57. List these times in order of slowest to fastest.

58. **Round** each time to 1 d.p.

A machine is used to filled juice container.



59. **Calculate** the total volume of juice if 125 containers were filled, with an average volume of 1002.16mL per container. Answer in mL and L.

60. **Round** your answer in litres to 1 d.p.

61. If each container of juice sells for $1.75 each, calculate the cost to buy 125 containers of juice.

62. **Create** your own questions that involve decimal calculation. Exchange your questions with a classmate so that she / he can work out the answers, rounding the answers to 1 d.p. and 2 d.p.

Approximations, estimations & rounding significant figures:

When calculating or taking measurements a second way to approximate an answer is to round off to a certain number of **significant figures (s.f.)**.

Example: 634 = 600 rounded to 1 significant figure, 634 = 630 (2 s.f.)

Round 2762 to 2 s.f. Answer: 2800 (2 s.f.)

Round 0.00056 to 1 s.f. Answer: 0.0006 (1 s.f.)

When rounding a number to a certain number of significant figures, count the required number of digits from the first non-zero digit. If the next number is 5 or above, add 1 to the previous digit. If the next digit is below 5, leave it as it is. Remember to add the zeros needed to keep place values correct.

Task 11

Round each number to **1 significant figure** (1 s.f.), **2 significant figures** (2 s.f.) and **3 significant figures** (3 s.f.)

1.	4263	2.	93721	3.	43968	4.	7592	5.	645056
6.	0.05236	7.	0.008532	8.	0.0004647	9.	0.48596	10.	3.6984
11.	0.09578	12.	9.2596	13.	186.0709	14.	1.0006	15.	56.7561
16.	5602.7034	17.	0.05295	18.	6.40932	19.	167.1596	20.	0.9637
21.	2.71999	22.	58.0975	23.	0.008694	24.	9.46209	25.	322.969
26.	0.030529	27.	4.6009	28.	485.321	29.	27	30.	0.65

Work out each question then **round** your answers to **1 s.f.** and **2 s.f.**

31.	5261 + 369	32.	7845 – 3659	33.	2531 × 25	34.	369 ÷ 4
35.	963.4 ÷ 7	36.	0.9 × 639.48	37.	593.9 + 12.96	38.	968.5 – 86.34
39.	1968.9 + 586.5	40.	56.97 ÷ 8	41.	69.853 – 51.966	42.	0.053 × 1.5
43.	968 + 25 × 9	44.	856 × 8 + 349	45.	98.6 + 43.8 ÷ 4	46.	89.4 ÷ 8 + 96.87
47.	685 – 245 ÷ 8	48.	658.6 ÷ 6 + 981	49.	1859 – 56 × 7	50.	5.6 × 2.5 – 2.76
51.	3.64 + 9.25 ÷ 8	52.	32.561 ÷ 5 – 2.64	53.	9.45 × 2.2 + 12.53	54.	37.3 – 82.236 ÷ 12

The distance a delivery truck travels each day for two weeks has been recorded below.

126km, 263km, 189km, 215km, 462km, 97km, 378km, 235km, 167km, 81km

55. **Estimate** the total distance travelled by first rounding each distance to 2 significant figures.
56. **Calculate** the actual distance travelled.
57. What is the difference between the estimated distance and actual distance travelled?

The weekly crowd attendance of people watching a rugby match for the first 10 rounds of the competition are recorded below.

12432, 9865, 13462, 11251, 10065, 9963, 11523, 10364, 12678, 9562

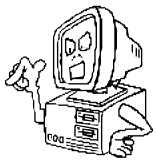
58. **Estimate** the total crowd attendance by first rounding each number to 2 significant figures.
59. **Calculate** the actual crowd attendance.
60. What is the difference between the estimated crowd numbers and actual crowd numbers?

61. **Create** your own questions that involve whole number calculations. Exchange your questions with a classmate so that she / he can work out the answers, rounding the answers to 1 s.f. and 2 s.f.

Finding squares and estimating square roots:

When a number is multiplied by itself, such as ... 1 × 1, 2 × 2, 3 × 3, 4 × 4, 5 × 5, 6 × 6, 7 × 7, 8 × 8 etc. ... the answers that are created, are numbers known as **squares**. That is, 1, 4, 9, 16, 25, 36, 49, 64, ...

These can be written as 1^2, 2^2, 3^2, 4^2, 5^2 , etc., where the small number 2 is called a **power**.



The opposite of squaring a number is to find the **square root**. The symbol for square root is $\sqrt{\ }$.
Example: If $9^2 = 81$, then $\sqrt{81} = 9$.

The square root of a number can be estimated, by a trial and error method and using a calculator.
Example: Find $\sqrt{60}$ $7^2 = 49$ and $8^2 = 64$, so try 7.7^2 answer: 59.29 too low
try 7.8^2 answer: 60.84 too high
try 7.75^2 answer: 60.0625 close enough?

This trial and error method can be repeated several times until you get a more accurate answer.

Task 12

Calculate the **squares** of these numbers, accurate to **1 d.p.**

1.	6.3^2	2.	8.6^2	3.	10.5^2	4.	11.7^2	5.	12.6^2
6.	18.3^2	7.	46.8^2	8.	59.7^2	9.	96.4^2	10.	112.8^2

Calculate the **squares** of these numbers, accurate to **2 d.p.**

11.	2.36^2	12.	6.95^2	13.	4.98^2	14.	9.73^2	15.	9.65^2
16.	7.13^2	17.	0.36^2	18.	9.61^2	19.	8.65^2	20.	3.096^2

Estimate the **square root** of these numbers to **2 d.p. accuracy**. (**Do not** use the √ key on your calculator.)

21.	20	22.	27	23.	40	24.	55	25.	60
26.	69	27.	75	28.	80	29.	85	30.	110
31.	130	32.	150	33.	168	34.	200	35.	250
36.	9.7	37.	12.9	38.	33.9	39.	42.9	40.	76.8
41.	0.95	42.	56.78	43.	139.4	44.	563.9	45.	862.7

46. Use the √ key on your calculator to find the **exact** square root of each number above, accurate to **4 d.p.**

A courtyard 10 metres by 10 metres is made up of 256 square cobble stones.

47. **Calculate** the number of cobbles along each side of the courtyard.
48. **Calculate** the dimensions of one cobblestone.
49. If cobble stones cost $1.25 each, what did it cost to cobble this courtyard?

A new kitchen measures 3.6m by 3.6m. The floor is to be covered with square floor tiles, that measure 30cm by 30cm.

50. **Calculate** the number of floor tiles needed to go along one side of the kitchen.
51. **Calculate** the number of floor tiles needed to tile the kitchen floor.
52. If floor tiles cost $0.65 each, what is the cost of tiling the kitchen floor?
53. A second room in this house has been tiled using 64 tiles. If this room is shaped like a square, how many tiles along one side of the room?
54. What is the dimension of this room? Give your answer in metres.

Expressing a fraction as a decimal:

The top number of a fraction is called the **numerator**. The bottom number is called the **denominator**.
Example: In the fraction $\frac{5}{8}$, 5 is the numerator and 8 is the denominator.

Fractions can be converted into decimals by dividing the numerator by the denominator.
Example: Convert $\frac{5}{8}$ to a decimal.

$$8\overline{)5.000} = 0.625$$

Zeros will need to be added after the decimal point.
You keep dividing until there is no remainder or there are at least 3 digits after the decimal point.

Answer: The fraction $\frac{5}{6}$ converted to a decimal is 0.625.

Some fractions can be simplified by dividing the numerator and denominator by the same number.
Example: $^{50}/_{100}$ (divide by 10) = $^{5}/_{10}$ (divide by 5) = $^{1}/_{2}$ This will make the conversion to a decimal easier.

Some fractions create interesting decimals, with a recurring pattern of digits.
Example: $^{2}/_{9} = 0.2222\dot{}$ This small dot means that the 2's go on forever.
$^{3}/_{11} = 0.27\dot{2}7\dot{}$ ← Both the digits 2 and 7 repeat in this decimal.

Task 13

Convert these fractions to decimals. Some fractions can be simpified first. *Example:* $^{8}/_{10} = {}^{4}/_{5}$

1.	$^{1}/_{5}$	2.	$^{1}/_{8}$	3.	$^{3}/_{10}$	4.	$^{3}/_{5}$	5.	$^{7}/_{8}$
6.	$^{8}/_{14}$	7.	$^{6}/_{100}$	8.	$^{5}/_{6}$	9.	$^{4}/_{8}$	10.	$^{6}/_{10}$
11.	$^{7}/_{12}$	12.	$^{6}/_{8}$	13.	$^{4}/_{12}$	14.	$^{9}/_{10}$	15.	$^{6}/_{12}$
16.	$^{6}/_{24}$	17.	$^{10}/_{16}$	18.	$^{8}/_{18}$	19.	$^{9}/_{12}$	20.	$^{7}/_{15}$
21.	$^{9}/_{27}$	22.	$^{5}/_{20}$	23.	$^{7}/_{28}$	24.	$^{12}/_{20}$	25.	$^{5}/_{25}$

Investigate the patterns created when you convert these fractions ...

26. $^{1}/_{11}$, $^{2}/_{11}$, $^{3}/_{11}$, $^{4}/_{11}$, $^{5}/_{11}$, $^{6}/_{11}$, $^{7}/_{11}$, $^{8}/_{11}$, $^{9}/_{11}$ and $^{10}/_{11}$ to decimals.

27. $^{1}/_{9}$, $^{2}/_{9}$, $^{3}/_{9}$, $^{4}/_{9}$, $^{5}/_{9}$, $^{6}/_{9}$, $^{7}/_{9}$ and $^{8}/_{9}$ to decimals.

28. $^{1}/_{7}$, $^{2}/_{7}$, $^{3}/_{7}$, $^{4}/_{7}$, $^{5}/_{7}$ and $^{6}/_{7}$ to decimals.

Expressing a decimal as a fraction:

Decimals can be expressed as special fractions, with denominators of 10, 100, 1000 etc.
Example: Convert 0.7, 0.42 and 0.127 to fractions.

Answers: One digit after the decimal point, therefore 10 is the denominator, $^{7}/_{10}$
Two digits after the decimal point, therefore 100 is the denominator, $^{42}/_{100}$
Three digits after the decimal point, therefore 1000 is the denominator, $^{127}/_{1000}$

Task 14

Convert these decimals to fractions, then simplify if you can.

1.	0.8	2.	0.07	3.	0.006	4.	0.28	5.	0.015
6.	0.36	7.	0.4	8.	0.85	9.	0.56	10.	0.2
11.	0.275	12.	0.0125	13.	0.425	14.	0.6	15.	0.96
16.	0.9	17.	0.785	18.	0.5	19.	0.106	20.	0.0004
21.	0.87	22.	0.09	23.	0.903	24.	0.72	25.	0.825
26.	0.012	27.	0.7	28.	0.64	29.	0.048	30.	0.009

Expressing a decimal as a percentage:

Fractions which are out of 100 are commonly known as **percentages**.
Example: 30 out of 100 could be written as the fraction $^{30}/_{100}$
or as a percentage 30%, which is read as "30 per cent".

To convert a decimal to a percentage, multiply the decimal by 100.
Example: 0.3 × 100 = 30%, 0.09 × 100 = 9%, 1.35 × 100 = 135%

Task 15

Convert these decimals to percentages.

1.	0.26	2.	0.08	3.	0.012	4.	0.27	5.	0.029
6.	0.74	7.	0.4	8.	0.75	9.	0.52	10.	0.87
11.	0.267	12.	0.37	13.	0.085	14.	0.9	15.	0.7
16.	0.65	17.	0.125	18.	0.6	19.	0.403	20.	0.02
21.	0.036	22.	2.1	23.	3.45	24.	0.041	25.	0.083
26.	0.3	27.	0.005	28.	0.063	29.	1.86	30.	0.69

Expressing a percentage as a decimal:

Percentages are out of 100 and can be written as a fraction. To convert a fraction to a decimal we divide the numerator by the denominator. For all percentages written as fractions, the denominator is 100.
Therefore to convert a percentage to a decimal, **divide the percentage by 100**.
Example: Convert 60% to a decimal.
Answer: 60% is the same as $^{60}/_{100}$, therefore 60 ÷ 100 = 0.6

To convert a percentage to a decimal, divide the percentage by 100.

Task 16

Convert these percentages to decimals.

1.	65%	2.	50%	3.	9%	4.	15%	5.	45%
6.	87%	7.	55%	8.	100%	9.	17%	10.	5%
11.	52%	12.	40%	13.	93%	14.	80%	15.	23%
16.	75%	17.	66%	18.	30%	19.	37.5%	20.	80.5%
21.	1.8%	22.	140%	23.	0.6%	24.	137%	25.	306%
26.	0.9%	27.	3.95%	28.	96%	29.	54.8%	30.	84.9%

Converting between fractions, decimals and percentages:

Task 17

Copy this table of commonly used fractions, decimals and percentages.

Complete the table by filling in the gaps using the fractions, decimals and percentages from the box at the right.

Fraction	Decimal	Percentage
$^{1}/_{4}$		
	$0.3\dot{}$	
		40%
$^{1}/_{2}$		
		$66.6\dot{}\%$
	0.75	

0.4	0.5	$0.6\dot{}$
0.25	$^{1}/_{3}$	75%
25%	50%	$^{3}/_{4}$
$^{2}/_{5}$	$33.3\dot{}\%$	$^{2}/_{3}$

Finding a percentage of a quantity:

Finding a percentage of a quantity can be done several ways.
Example: Find 30% of $600.

One way this could be done is by finding 10% of the quantity first, then multiply by 3 as 3 × 10% = 30%.
Example: 10% of $600 is $60, therefore 30% would be $60 × 3 = $180.

A second way would be to convert the percentage to a decimal, then multiply the quantity by the decimal.
Example: 30% = 0.3, therefore $600 × 0.3 = $180.

Which way do you think is easier? Can you think of other ways of finding the percentage of a quantity?

Task 18

Calculate the following **percentages** of these whole numbers.

1.	50% of 60	2.	10% of 75	3.	10% of 48	4.	20% of 45
5.	40% of 110	6.	40% of 120	7.	60% of 56	8.	60% of 90
9.	20% of 68	10.	10% of 78	11.	70% of 96	12.	60% of 50
13.	25% of 84	14.	30% of 56	15.	25% of 144	16.	75% of 96
17.	75% of 60	18.	45% of 88	19.	60% of 54	20.	95% of 80
21.	15% of 50	22.	65% of 48.	23.	120% of 90	24.	210% of 70

A new computer will cost $2350 and can be purchased with a deposit.

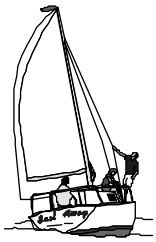
25. **Calculate** the deposit if 15% is required.
26. How much is left to pay after the deposit has been paid?
27. If a deposit of $470 was paid, what percentage of the total price is that?

During the past 120 days, the weather conditions were recorded.

28. On 30% of the days it was cloudy. **Calculate** the number of days it was cloudy.
29. On 45% of the days it was sunny. **Calculate** the number of sunny days.
30. If it rained on 12 days, what percentage of the total days is that?

During the holidays, Richard has been camping with his friends.

31. On the first day they spent 20% of the day fishing.
Calculate the number of hours they spent fishing.
32. On the second day, they spent 40% of the day sailing.
Calculate the number of hours they spent sailing.



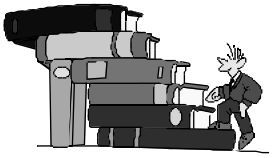
33. If Richard spent 6 hours one day tramping, what percentage of a day is that?

A school cross country race is run over a distance of 7200m.

34. If Rangi has completed 72% of the course, **calculate** how far he has run so far.
35. How far does Rangi have left to run? Convert your answer to a percentage of the total distance of the race.

A 54m long fence around a swimming pool is to be painted.

36. If 55% of the fence has already been painted, **calculate** the length of the fence that has been painted.
37. How much of the fence is left to paint? Convert your answer to a percentage of the total length of the fence.



In the school library there are 840 books.

38. If 45% of the books are suitable for pupils 9 years old or younger, **calculate** how many books that is.
39. If 20% of the books are fiction, **calculate** how many books that is?
40. If 126 books are nature books, what percentage is this?

41. **Create** word problems involving **finding percentages** of a quantity.
Exchange your questions with a classmate and compare answers.

Multiplying and dividing decimals:

When multiplying or dividing using decimals, setting out the question correctly is important, especially when a calculator is not being used.

Example: 2.38 × 0.9 could be rewritten as .... and 3.65 ÷ 0.5 could be rewritten as ...

$$\begin{array}{r} 2.38 \\ \times\ 0.9 \\ \hline 2.142 \\ \hline \end{array}$$

By counting the digits to the right of the decimal point in the question, the position of the decimal point in the answer can be found.

$$0.5\overline{)3.65} \longrightarrow 5\overline{)36.5}$$

The decimal point is moved to the right, the same number of places in both numbers, so that you are dividing by a whole number.
That is, 0.5 becomes 5, and 3.65 becomes 36.5.

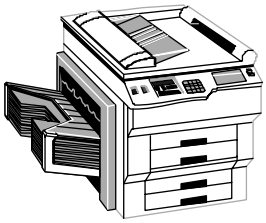
Task 19

Calculate the following, setting out the questions correctly to avoid mistakes. (Try to do this **WITHOUT** a calculator)

1.	2.953 × 12	2.	7.94 ÷ 0.2	3.	96.75 × 1.2	4.	435.65 ÷ 0.5
5.	136.64 ÷ 0.04	6.	8.75 × 3.6	7.	80.375 ÷ 0.05	8.	153.4 × 0.25
9.	96.84 ÷ 1.2	10.	50.616 ÷ 0.9	11.	109.42 × 2.5	12.	88.56 ÷ 0.9
13.	5634 × 0.008	14.	3.951 × 75	15.	0.087 × 32.8	16.	3.444 ÷ 0.004
17.	50.853 ÷ 0.011	18.	7.605 × 0.034	19.	22.743 ÷ 0.07	20.	0.946 × 0.018
21.	0.236 × 0.08	22.	723.87 ÷ 0.09	23.	0.2168 ÷ 0.0004	24.	26.851 × 0.009

A school is going to buy some new computers that will cost $2150.90 each.

25. **Calculate** the cost of buying 4, 7 and 12 computers.



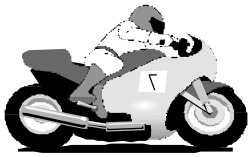
A school is charged 1.4 cents per copy, for photocopying A4 sized paper.

26. **Convert** 1.4 cents to dollars.
27. **Calculate** the cost of copying 800, 1200 and 2700 copies.
    State your answers in dollars.
28. If the school paid $70, $105 and $156.80 in photocopy charges, how many copies did they do each time?

A travelling salesman recorded the distances he travelled each day for a week, including the weekend.

29. If he travelled 1646.40km during this week, **calculate** the average (mean) distance he travelled each day of the week.

30. If he averaged 167.5km each day for 15 days, **calculate** the total distance he would travel during this time.
31. If he used 102.5L of petrol, at a cost of $0.95 / L, **calculate** the total cost of petrol he used.
32. If petrol costs $0.95 / L and an empty tank costs $47.50 to fill, how much petrol does the tank hold?



A motor cycle race is being raced around a local street course that is 4.25km per lap.

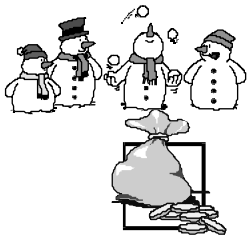
33. **Calculate** the total distance of a 25 lap, 60 lap and 120 lap race? Answer in kilometres.

The average time taken per lap is 85.75 seconds.

34. **Calculate** the time taken to complete a 75 lap race. Answer in seconds.
35. **Convert** the race time to minutes.
36. If a rider takes 1hr 56 min 52.5 sec to complete a 75 lap race, calculate his average lap time. Give your answer in seconds.

37. **Create** word problems involving the multiplication and division of decimals.
    Exchange your questions with a classmate and compare answers.

Understanding negative numbers:



Examples: Last night there was a 5 degree frost.
A building has two car park levels beneath the ground floor.
A diver went 30 metres below the surface of the sea.
John's bank account is in overdraft by the sum of $200.

In these examples, the numbers mentioned could be written as **negative numbers**.

Answers: a $^{-}5^{o}C$ frost, car park levels $^{-}1$ and $^{-}2$, $^{-}30$m below the surface, and $^{-}\$200$ bank balance.

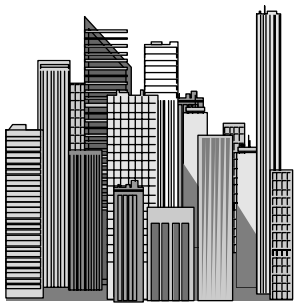
Positive numbers are above zero and the positive sign does not have to be shown.
Negative numbers are below zero, and the small **negative sign** must be shown.

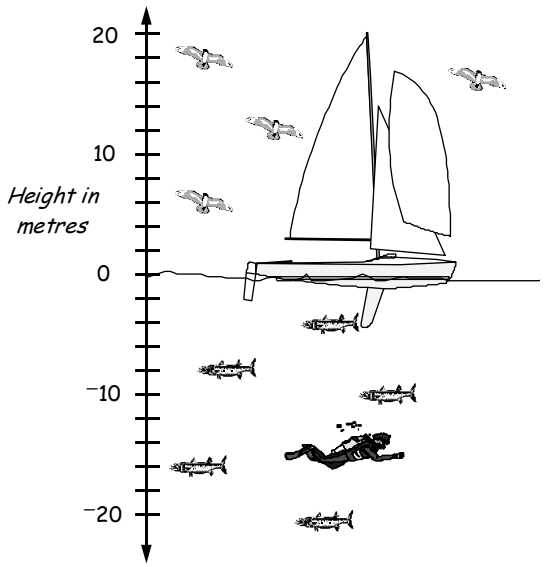
Task 20

A new highrise office block has been built, with some additional levels below ground level.

1. How could you label the floors of this building if there were 10 floors above ground and 3 floors below? Let G = ground floor.
2. Brian has an office on the 6th floor and drops 8 floors to get to his car. On which floor is his car?
3. Pauline parks her car 3 floors below the ground floor and takes the lift up 7 levels to her office. On which floor is her office?

?
?
?
?
?
?
?
?
?
?
G
?
?
?





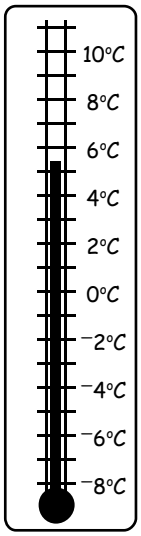
This diagram shows a sailing ship, a diver, some birds and some fish.
The sea level is at zero on the scale drawn.

4. How high is the mast above the sea level?
5. How far below the surface is the boat's keel?
6. **State** the height of each bird above the sea level as positive numbers.
7. **State** the depth of the 4 fish below sea level as negative numbers.
8. **State** the depth of the diver below sea level as a negative number.

A bird is flying 8 metres above the sea,
then drops 11 metres straight down.

9. **State** the depth the bird reaches below the surface of the sea, as a negative number.

The temperature scale is one of the most commonly used scales that uses negative numbers, especially when recording maximum and minimum daily temperatures.



10. What is the temperature on this diagram of a thermometer?

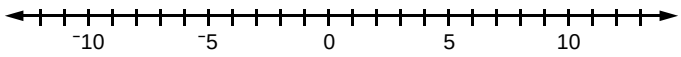
Use the thermometer scale to **calculate** the new temperatures after the following changes ...

11. Starting temperature 9°C, drops 5°C
12. Starting temperature 4°C, rises 4°C
13. Starting temperature 6°C, drops 9°C
14. Starting temperature 4°C, drops 11°C
15. Starting temperature $^{-}3^{o}C$, rises 7°C
16. Starting temperature 0°C, drops 7°C
17. Starting temperature $^{-}2^{o}C$, drops 6°C
18. Starting temperature $^{-}5^{o}C$, rises 9°C
19. Starting temperature 5°C, drops 10°C
20. Starting temperature $^{-}3^{o}C$, drops 6°C
21. Starting temperature $^{-}8.7^{o}C$, rises 5.2°C
22. Starting temperature $^{-}4.3^{o}C$, rises 8.7°C
23. Starting temperature $^{-}7.2^{o}C$, rises 5.9°C
24. Starting temperature $^{-}1.2^{o}C$, rises 3.3°C

Understanding and using number lines:

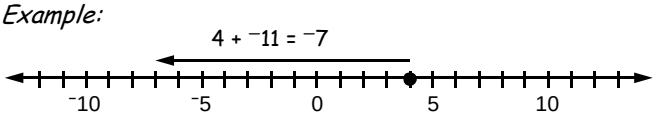
Positive and **negative** numbers can be represented on a **number line**. A number line goes on forever, in both directions.

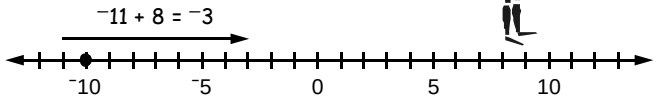
Example:



A number line can be used to add positive and negative numbers together.

Example:





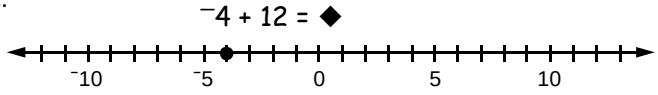
The first number of the question is the starting point on the number line.

When you add 12 on a number line, which direction do you move? Answer: Move 12 to the right.
When you add ⁻9 on a number line, which direction do you move? Answer: Move 9 to the left.

Task 21

Use the number lines below to **add** these **positive** and **negative numbers** together.
The first number for each problem has been marked with a dot on the number line.

1.



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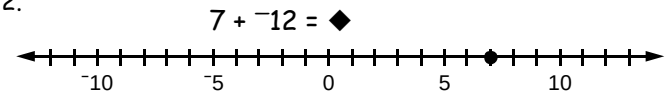
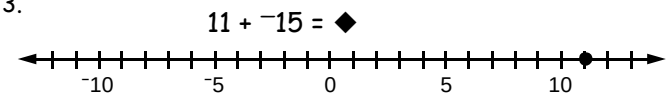


3.



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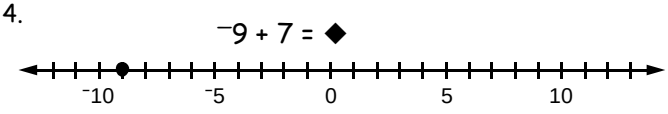
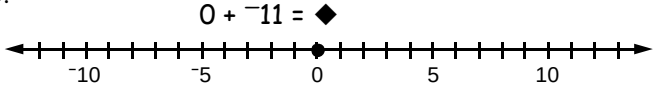
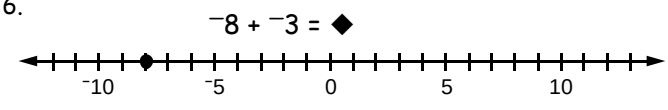


5.



6.



Add or **subtract** these positive and negative numbers, using the number line above, if required.

7.	⁻6 + 10	8.	5 + ⁻8	9.	⁻9 + 10	10.	7 + ⁻5	11.	⁻10 + 9
12.	8 + ⁻11	13.	⁻11 + 8	14.	10 + ⁻13	15.	⁻9 + 15	16.	10 + ⁻14
17.	⁻8 + 17	18.	12 + ⁻19	19.	⁻13 + 20	20.	10 + ⁻16	21.	⁻12 + 15
22.	10 + ⁻19	23.	8 + ⁻19	24.	7 + ⁻18	25.	11 + ⁻19	26.	⁻9 + 17
27.	⁻8 + 18	28.	⁻15 + 9	29.	17 + ⁻9	30.	⁻5 + 4	31.	⁻7 + 6
32.	⁻7 + 17	33.	12 + ⁻17	34.	⁻9 + 21	35.	⁻19 + 15	36.	11 + ⁻17
37.	19 + ⁻17	38.	⁻7 + 17	39.	⁻7 + ⁻4	40.	⁻8 + ⁻11	41.	⁻9 + ⁻13
42.	⁻¹5 + ⁻9	43.	⁻8 - ⁻13	44.	⁻7 - ⁻18	45.	⁻13 - ⁻9	46.	⁻14 - ⁻8

Task 22

Using a die (dice), play this game in small groups.

The odd numbers are negative, that is, ⁻1, ⁻3 & ⁻5. The even numbers are positive, that is, 2, 4 & 6.

Roll the die 5 times, recording the numbers that appear, then **add up** the numbers.
Example: 4 + ⁻5 + ⁻3 + 2 + ⁻1 = ⁻3.

Continue until each pupil has had 5 turns, then total your scores.
The winner is the pupil with the lowest combined score.

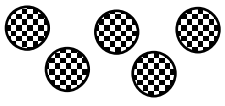
More negative numbers:

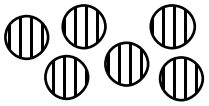
Sally drew two differently coloured circles to represent positive and negative numbers.

= positive 1 = 1

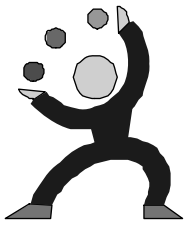
= negative 1 = $^{-}1$

Example: What numbers do these two groups of circles represent?





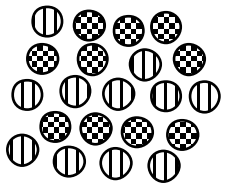
Answer: 5 and $^{-}6$
(Note: The positive sign is left off the 5)

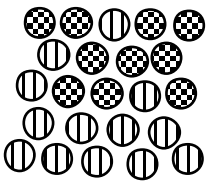


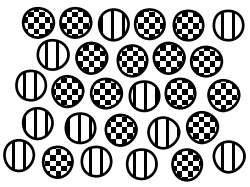
If one positive circle and one negative circle cancel each other, what number do all the circles above represent? Answer: $5 + {}^{-}6 = {}^{-}1$

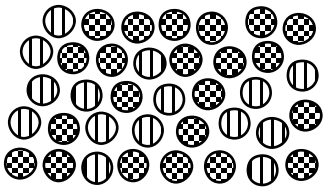
Task 23

Count the positive and negative circles in each group below and **write** a simple **mathematical sentence** for each. Remember one positive circle cancels one negative circle. *Example:* $4 + {}^{-}9 = {}^{-}5$.

1. 

2. 

3. 

4. 

Work out these questions involving **adding positive** and **negative** numbers.

5.	$^{-}8 + 9$	6.	$11 + {}^{-}14$	7.	$^{-}12 + 11$	8.	$23 + {}^{-}17$	9.	$^{-}11 + 14$
10.	$22 + {}^{-}19$	11.	$^{-}24 + 17$	12.	$45 + {}^{-}29$	13.	$^{-}38 + 53$	14.	$19 + {}^{-}19$
15.	$^{-}27 + 18$	16.	$46 + {}^{-}37$	17.	$^{-}51 + 37$	18.	$38 + {}^{-}49$	19.	$^{-}24 + 27$
20.	$^{-}41 + {}^{-}36$	21.	$^{-}15 - {}^{-}27$	22.	$31 - {}^{-}17$	23.	$36 - {}^{-}40$	24.	$^{-}25 - {}^{-}49$
25.	$^{-}8.9 + 7.6$	26.	$11.6 + {}^{-}9.8$	27.	$15.6 + {}^{-}21.4$	28.	$^{-}17.4 + {}^{-}25.8$	29.	$11.9 + {}^{-}27.3$
30.	$^{-}42.3 + {}^{-}17.6$	31.	$^{-}28.5 + 36.4$	32.	$17.3 - {}^{-}41.6$	33.	$^{-}54.4 - {}^{-}35.9$	34.	$^{-}37.1 - {}^{-}41.9$

Bank overdrafts:

When you spend more money than you have in your bank account, your bank account is said to be in **overdraft**. The balance of your account could be written as a negative number.
Banks allow you to go into overdraft, so they can charge you interest on the negative balance.
Example: $^{-}$\$200 means the account is \$200 in overdraft.

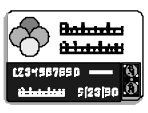
If Mr Keys has \$150 in the bank and withdraws \$200, what will his bank balance be? Answer: $^{-}$\$50 (\$50 in overdraft)

Task 24

When money is **deposited** into an account or **withdrawn** from an account, it is called a **transaction**.
Copy this table below, then calculate the **new balance** of this bank account after each transaction.

1.

Date	Detail	Withdrawals		Deposits		Balance	
1/3	Opening balance					\$112	50
3/3	Purchased stereo	\$185	00				
5/3	Wages from part-time job			\$54	60		
8/3	Bought 9 C.D.'s	\$69	65				
12/3	Wages from part-time job			\$85	80		
15/3	Sold bike			\$50	00		
18/3	Night out at movies	\$25	75				
19/3	Wages from part-time job			\$70	20		
21/3	Bought new bike	\$199	95				



2. **Create** your own bank balance questions and exchange with a classmate.

Expressing a quantity as a fraction or as a percentage of a whole:

Seven pupils in a class of 28 like playing rugby.

Ten out of 50 pupils were away from school today.

On 17 of the last 31 days it has rained.

In all of these statements there is information that can be expressed or written as a fraction or a percentage.

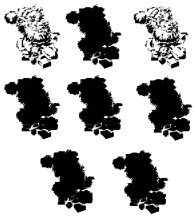
Examples: $^{6}/_{24}$ or $^{1}/_{4}$ or 25% of the pupils like playing hockey,
$^{4}/_{20}$ or $^{1}/_{5}$ or 20% of the pupils were away from school today,
On $^{10}/_{20}$ or $^{1}/_{2}$ or 50% of the last 20 days it has been raining.

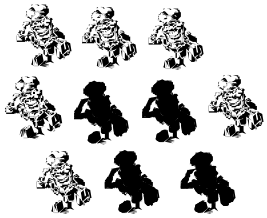
Discuss events that could be expressed as fractions or percentages.

Task 25

Express the shaded diagrams as a **fraction** and as a **percentage** of each group of diagrams.

1. 

2. 

3. 

4. 

Write the information in each question as a **fraction** and then convert your answers to **percentages**.

5. Joanne scored 65 out of 100 in a maths test.
6. 35 pupils in a school of 100 are in Room 7.
7. Of 50 pets, 19 were cats.
8. It has rained during 17 days out of 20 days.
9. 9 out of 25 pupils were away from school.
10. 3 out of 5 people watch the rugby test.

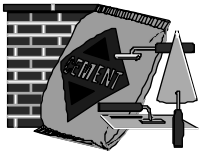
Mr Proctor's car has a 40L petrol tank. He goes on a long trip and then refills the tank.

11. If the refilling of the petrol tank takes 18L, what **fraction** of a full tank was used during the trip? **Convert** your answer to a **percentage**.
12. If the petrol costs \$0.975 / L, how much did it cost to fill the tank?

A school cross country race is 5 laps around the school grounds.

13. If Karen has completed 3 laps, what **fraction** of the race has she completed so far? **Convert** your answer to a **percentage**.
14. What **percentage** of the race does she have left to run? **Convert** your answer to a **fraction**.
15. If Scott takes about 3 min 20 sec for each lap, how long will he take to complete the race?

A brick fence is being constructed using 240 bricks.



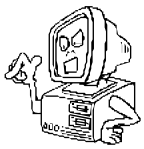
16. If 150 bricks have been used so, what **fraction** of the fence has been completed? **Convert** your answer to a **percentage**.
17. If each brick costs \$0.45, how much will the bricks cost to build this fence?

At a one day cricket match, 21000 tickets have been presold.

18. If there are 6500 seats still unsold, what is the largest possible crowd that could attend?
19. What **fraction** of the seats were presold? **Convert** your answer to a **percentage**.
20. What **fraction** of the seats are yet to be sold? **Convert** your answer to a **percentage**.
21. If the crowd attendance ended up being 25300, what **percentage** of a full stadium turned up to watch the game?

22. **Create** word problems involving fraction and percentage calculations. **Exchange** your questions with a classmate and compare answers.

Increasing and decreasing by a given percentage:



To increase or decrease by a given percentage, find the actual increase or decrease, then add or subtract..

Examples: Increase $40 by 10%. Answer: 10% of $40 = $4, $40 + $4 = $44

Decrease $50 by 20% Answer: 20% of $50 = $10, $50 – $10 = $40

Task 26

Increase or **decrease** the following numbers as indicated.

1.	increase 30 by 10%	2.	decrease 60 by 10%	3.	decrease 80 by 20%	4.	increase 65 by 20%
5.	decrease 84 by 25%	6.	increase 108 by 25%	7.	decrease 60 by 40%	8.	increase 48 by 50%
9.	increase 120 by 15%	10.	decrease 90 by 15%	11.	increase 240 by 30%	12.	decrease 110 by 5%
13.	decrease 20 by 35%	14.	increase 150 by 8%	15.	decrease 95 by 20%	16.	increase 124 by 40%
17.	increase 340 by 5%	18.	decrease 175 by 60%	19.	increase 265 by 45%	20.	decrease 180 by 75%
21.	decrease 85 by 7.5%	22.	increase 27 by 12.5%	23.	decrease 164 by 9.5%	24.	increase 475 by 2.5%

A new computer will cost $2750 and can be purchased with a deposit.

25. **Calculate** the deposit if 10% is required.
26. How much is left to pay after the deposit has been paid?

Car prices increased 5% during the month of February. **Calculate** the new prices for the car prices listed below.

27. $19500, $21950, $25300, $27900 and $32450.

The Goods and Services Tax (GST) is 12.5%. **Calculate** the selling price for these items after **GST** has been added.

28. $350

29. $88.80

30. $177.73

31. $2620

32. $1550

A clothing shop is having a sale, with discounted prices. **Calculate** the new prices after the **20% discount** has been taken off.

33.

Normal price: **$19.90**

34.

Normal price: **$35.60**

35.

Normal price: **$47.90**

36.

Normal price: **$8.90**

37.

Normal price: **$14.75**

A retail shop purchases products at ***wholesale prices***. The ***retail price*** is worked out by **adding 40%** to the wholesale price, then **GST (12.5%)** is added to this price. **Calculate** the retail price of each item.

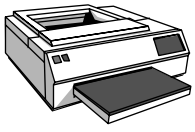
38.

Wholesale price: **$1200.00**

39.

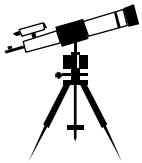
Wholesale price: **$42.00**

40.



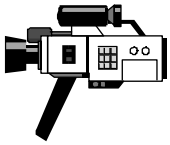
Wholesale price: **$230.00**

41.



Wholesale price: **$175.00**

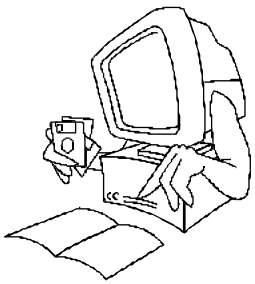
42.



Wholesale price: **$670.00**

43. **Create** word problems involving **increasing** or **decreasing** numbers by a given **percentages**. **Exchange** your questions with a classmate and compare answers.

Writing and simplifying ratios:



Using a ratio is one way of describing how often something has happened.
Example: Three out of four pupils in Year 9 like going to the movies.

This statement can be written as a ratio of **3 : 4**.

Write these statements as ratios.

3 out of 8 pupils play hockey in Room 7.
What is the ratio of girls to boys in Room 10 if there are 15 girls and 12 boys?
Jan and Stu shared some lollies in a ratio of two to three.

Answers: 3 : 8, 15 : 12, 2 : 3

A ratio can be **simplified** if all numbers of a ratio can be divided by the same number.
Example: 60 : 50 = 6 : 5 (divide by 10), 18 : 6 : 12 = 3 : 1 : 2 (divide by 6)

Simplify these ratios. 25 : 45, 27 : 36, 24 : 48 : 36 Answers: 5 : 9, 3 : 4, 2 : 4 : 3

Task 27

Write the information in each statement as a ratio, then simplify the ratio if possible.

1. On five out of seven days last week it was raining.
2. Jodie banked $5.00 of every $20.00 she earned.
3. 40 out of 60 people watch TV 1 news each night.
4. On camp there are 3 teachers and 27 pupils.
5. At a concert there were 78 adults to 14 children.
6. 45 out of 90 households have a pet cat.
7. In a class there were 15 boys and 18 girls.
8. On 6 of the past 30 days it was very hot.
9. 85 out of 600 pupils started school this year.
10. There were 32 children and 4 adults at a party.

Simplify these ratios.

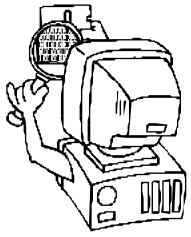
11.	5 : 25	12.	20 : 10	13.	21 : 35	14.	18 : 40	15.	36 : 44
16.	28 : 7	17.	63 : 45	18.	32 : 56	19.	45 : 25	20.	28 : 63
21.	36 : 48	22.	72 : 24	23.	33 : 88	24.	96 : 36	25.	49 : 84
26.	9 : 27 : 18	27.	84 : 36 : 108	28.	26 : 52 : 13	29.	144 : 60 : 24	30.	240 : 320 : 640

Writing ratios as fractions:

Example: The ratio 4 : 5 can be written as the fraction $^4/_5$. The ratio 8 : 3 can be be written as the fraction $^8/_3 = 2\ ^2/_3$.

Write these statements as ratios and then as a **fraction**.

5 out of 8 pupils play soccer in Room 12
What is the ratio of girls to boys in Year 9 if there are 80 girls and 65 boys?
Rhonda and Keith shared some pizza in a ration of 3 to 4.



Answers: 5 : 8 = $^5/_8$, 80 : 65 = $^{80}/_{65}$, 3 : 4 = $^3/_4$

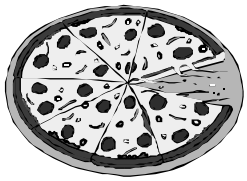
Some ratios written as fractions can also be **simplified** to create the simplest equivalent fraction
Example: 70 : 90 = $^{70}/_{90} = {}^7/_9$

Task 28

Write these ratios as fractions and then **simplify** each fraction if possible.

1.	14 : 28	2.	15 : 30	3.	24 : 36	4.	15 : 40	5.	33 : 77
6.	12 : 32	7.	21 : 42	8.	27 : 63	9.	45 : 60	10.	30 : 120
11.	50 : 72	12.	84 : 72	13.	56 : 88	14.	108 : 81	15.	49 : 84
16.	120 : 65	17.	150 : 25	18.	26 : 39	19.	72 : 160	20.	96 : 108

Sharing quantities by a given ratio:



Example: A pizza is cut into 10 pieces and shared in a ratio of 2 : 3 between Auriol and Katie. How many pieces of pizza does each friend eat?

Answer:

Add the ratio numbers	2 + 3 = **5**
Divide the quantity being shared by this answer.	10 ÷ 5 = **2**
Multiply each ratio number by this answer.	2 × **2** = 4 and 3 × **2** = 6

Therefore, Auriol had 4 pieces of pizza and Katie had 6 pieces of pizza.

Discuss other ways of sharing a quantity by a given ratio.

Task 29

What is the total number of parts if something is divided in the given ratios?

1.	2 : 7	2.	3 : 4	3.	6 : 1	4.	2 : 9	5.	13 : 6
6.	5 : 3	7.	9 : 5	8.	7 : 8	9.	10 : 11	10.	5 : 18
11.	11 : 4	12.	6 : 13	13.	11 : 9	14.	3 : 17	15.	13 : 8

Share these quantities by the given ratios.

16.	Share $50 in a ratio of 1 : 4	17.	Divide 27mm in a ratio of 1 : 2.	18.	Share $48 in a ratio of 1 : 5.
19.	Divide 63kg in a ratio of 3 : 4	20.	Share $84 in a ratio of 2 : 5.	21.	Divide 108kg in a ratio of 7 : 2.
22.	Share $117 in a ratio of 4 : 5	23.	Divide 96mg in a ratio of 1 : 11.	24.	Share $88 in a ratio of 3 : 5.
25.	Divide 64kL in a ratio of 5 : 3	26.	Share $72 in a ratio of 2 : 7.	27.	Divide 56L in a ratio of 7 : 1.
28.	Divide $143 in a ratio of 11 : 2	29.	Share 200cm in a ratio of 3 : 2.	30.	Share $270 in a ratio of 1 : 2.

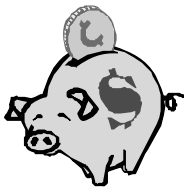
31. 200 tickets were sold for a concert. If the ratio of tickets sold to adults to that of children was 4 : 1, how many children went to the concert?

32. Jenny and John paid for a new car in the ratio of 2 : 3. If the car cost $15000, how much did Jenny pay towards the car?

33. Two charities raised $12500 for a combined garage sale. If the money is to be divided in a ratio of 3 : 5, how much does each charity receive?

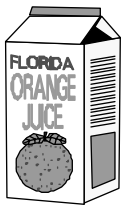
34. At a local rugby game between a Linwood and a St Albans club, Linwood supporters were out numbered in a ratio of 4 : 3. If 5964 people attended the game, how many were Linwood supporters?

35. For every dollar that Michael earns, he saves 20 cents. Write this information as a ratio in its simplest form.
36. If Michael earns $500 a week, how much does he save?
37. If Michael saves at the same rate for 10 weeks, how much will he have saved?
38. How long would it take for Michael to save $2700?



39. Karen is making 3 jackets of different sizes from a 3.6m length of material. If the material is to be divided up using a ratio of 1 : 3 : 2, how much material is needed for each jacket?

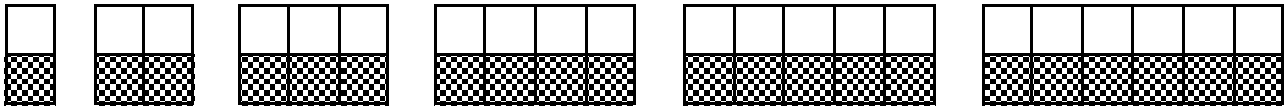
40. A juice factory produces 2700 litres of juice per day in a ratio of 3 orange : 2 apple : 4 black currant. Calculate the number of litres of each flavour produced per day.



41. **Create** word problems involving **sharing in a givien ratio**.
Exchange your questions with a classmate and compare answers.

Creating equivalent fractions and simplifying fractions:

In all of these diagrams below, half of the diagram is shaded.

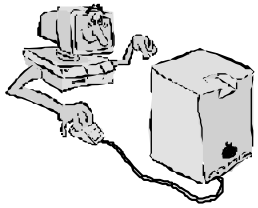


How many squares in each diagram are shaded? Answers: $^{1}/_{2}$, $^{2}/_{4}$, $^{3}/_{6}$, $^{4}/_{8}$, $^{5}/_{10}$, $^{6}/_{12}$

All of these fractions are called **equivalent fractions**.

Equivalent fractions can be created by multiplying or dividing the top and bottom numbers of a fraction by the same number.

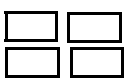
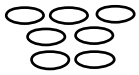
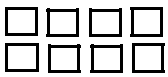
Example: $^{1}/_{2} \times {}^{8}/_{8} = {}^{8}/_{16}$ $^{15}/_{20} \div {}^{5}/_{5} = {}^{3}/_{4}$



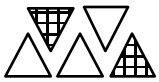
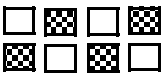
When **simplifying fractions**, the aim is to find the simplest equivalent fraction by dividing the fraction until you have the smallest possible numbers, top and bottom.

Task 30

Copy each diagram then **shade** in the fraction given for each.

1. $\frac{1}{3}$ 
2. $\frac{3}{4}$ 
3. $\frac{4}{5}$ 
4. $\frac{2}{7}$ 
5. $\frac{5}{8}$ 

What fraction of each digram is shaded? Simplify your answers if possible.

6. 
7. 
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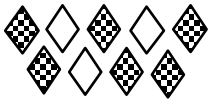
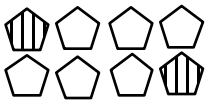
9. 
10. 

Find the missing numbers to **complete** these equivalent fractions.

11.	$^{1}/_{2} = {}^{\clubsuit}/_{14}$	$\clubsuit = ?$	12.	$^{1}/_{2} = {}^{\clubsuit}/_{50}$	$\clubsuit = ?$	13.	$^{1}/_{4} = {}^{\clubsuit}/_{20}$	$\clubsuit = ?$	14.	$^{1}/_{4} = {}^{\clubsuit}/_{60}$	$\clubsuit = ?$
15.	$^{1}/_{3} = {}^{\heartsuit}/_{24}$	$\heartsuit = ?$	16.	$^{1}/_{3} = {}^{\heartsuit}/_{36}$	$\heartsuit = ?$	17.	$^{3}/_{4} = {}^{\heartsuit}/_{24}$	$\heartsuit = ?$	18.	$^{3}/_{4} = {}^{\heartsuit}/_{40}$	$\heartsuit = ?$
19.	$^{2}/_{3} = {}^{\diamondsuit}/_{36}$	$\diamondsuit = ?$	20.	$^{2}/_{5} = {}^{\diamondsuit}/_{60}$	$\diamondsuit = ?$	21.	$^{4}/_{5} = {}^{\diamondsuit}/_{60}$	$\diamondsuit = ?$	22.	$^{1}/_{6} = {}^{\diamondsuit}/_{60}$	$\diamondsuit = ?$
23.	$^{5}/_{6} = {}^{\spadesuit}/_{66}$	$\spadesuit = ?$	24.	$^{7}/_{8} = {}^{\spadesuit}/_{64}$	$\spadesuit = ?$	25.	$^{3}/_{8} = {}^{\spadesuit}/_{96}$	$\spadesuit = ?$	26.	$^{3}/_{11} = {}^{\spadesuit}/_{88}$	$\spadesuit = ?$
27.	$^{4}/_{9} = {}^{\clubsuit}/_{54}$	$\clubsuit = ?$	28.	$^{3}/_{11} = {}^{\clubsuit}/_{99}$	$\clubsuit = ?$	29.	$^{7}/_{12} = {}^{\clubsuit}/_{84}$	$\clubsuit = ?$	30.	$^{8}/_{13} = {}^{\clubsuit}/_{65}$	$\clubsuit = ?$

Find the simplest **equivalent fraction** for these fractions.

31.	$^{9}/_{12}$	32.	$^{10}/_{15}$	33.	$^{13}/_{26}$	34.	$^{12}/_{36}$	35.	$^{9}/_{36}$	36.	$^{30}/_{45}$
37.	$^{8}/_{48}$	38.	$^{14}/_{35}$	39.	$^{27}/_{36}$	40.	$^{32}/_{40}$	41.	$^{24}/_{60}$	42.	$^{35}/_{42}$
43.	$^{22}/_{110}$	44.	$^{25}/_{150}$	45.	$^{40}/_{240}$	46.	$^{35}/_{165}$	47.	$^{42}/_{210}$	48.	$^{36}/_{192}$

Write the information in each question as a fraction, then **simplify** if possible.

49. Sally scored 65 out of 100 in a maths test.
50. On 20 days in April it was sunny.
51. 120 out of 200 people have a pet dog.
52. Of the 146 Year 9 pupils, 70 were girls.
53. On 8 of the past 14 days it rained.
54. 134 out of 152 pupils were wearing sweatshirts.
55. 24 out of 144 pupils were away from school today.
56. The 'All Blacks' won 14 out of the last 20 games.
57. 122 pupils out of 156 enjoy swimming.
58. Out of a class of 32, 28 passed the last test.
59. 220cm of a 540cm length of wood has been used up.
60. 4 of the 100 desks have been damaged by pupils.
61. Jodie scored 44 out of 50 in an assignment.
62. 23 of the 80 pages in a book had diagrams on them.
63. 84 out of 124 cars had a driver only in them.
64. In a survey of 120 houses, 18 had open fires.

Improper fractions and mixed numbers:

What is different about these fraction? $^{5}/_{2}$, $^{7}/_{3}$, $^{9}/_{7}$, $^{13}/_{8}$, $^{27}/_{5}$, $^{41}/_{6}$, $^{57}/_{9}$, etc.

Answer: The top number or numerator is larger than the bottom number or denominator.

This type of fraction is called an **improper fraction**.

An **improper fraction** can be converted to a **mixed number** by dividing the numerator by the denominator and recording the remainder as a fraction.

Example: $^{25}/_{7} = 3^{4}/_{7}$ (24 ÷ 7 = 3 + 4 remainder)

A **mixed number** can be converted to an **improper fraction** by multiplying the whole number by the denominator and adding on the numerator.

Example: $5^{2}/_{3} = {}^{17}/_{3}$ (5 × 3 = 15 plus 2 = 17)

Task 31

Convert these improper fractions to mixed numbers, simplifying if possible.

1.	$^{19}/_{5}$	2.	$^{27}/_{4}$	3.	$^{33}/_{5}$	4.	$^{57}/_{6}$	5.	$^{69}/_{7}$	6.	$^{71}/_{8}$
7.	$^{92}/_{9}$	8.	$^{58}/_{12}$	9.	$^{78}/_{9}$	10.	$^{103}/_{7}$	11.	$^{81}/_{11}$	12.	$^{123}/_{10}$

Convert these mixed numbers to improper fractions.

13.	$4\,^{3}/_{5}$	14.	$8\,^{1}/_{2}$	15.	$7\,^{3}/_{4}$	16.	$9\,^{2}/_{3}$	17.	$9\,^{5}/_{6}$	18.	$8\,^{2}/_{5}$
19.	$7\,^{1}/_{6}$	20.	$9\,^{4}/_{5}$	21.	$11\,^{5}/_{8}$	22.	$10\,^{4}/_{9}$	23.	$12\,^{7}/_{9}$	24.	$5\,^{5}/_{12}$

Adding and subtracting fractions:

To add or subtract fractions the denominators must be the same. This can be done by finding equivalent fractions.
Example: $^{1}/_{2} + {}^{2}/_{3} = {}^{3}/_{6} + {}^{4}/_{6} = {}^{7}/_{6} = 1^{1}/_{6}$

If the answer is an improper fraction, it can be converted to a mixed number, as above.

When subtracting, if may be necesary to convert a mixed number to an improper fraction before subtracting.
Example: $2^{1}/_{4} - 1^{3}/_{4} = {}^{9}/_{4} - {}^{7}/_{4} = {}^{2}/_{4} = {}^{1}/_{2}$

Task 32

Add and subtract these fractions, simplify your answers if possible.

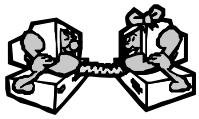
1.	$^{3}/_{4} + {}^{3}/_{4}$	2.	$^{1}/_{3} + {}^{2}/_{3}$	3.	$^{2}/_{5} + {}^{3}/_{5}$	4.	$^{9}/_{11} + {}^{8}/_{11}$.	5.	$^{4}/_{7} + {}^{5}/_{7}$
6.	$^{4}/_{5} - {}^{1}/_{5}$	7.	$^{7}/_{8} - {}^{3}/_{8}$	8.	$^{8}/_{9} - {}^{5}/_{9}$	9.	$^{11}/_{12} - {}^{7}/_{12}$	10.	$^{9}/_{11} - {}^{5}/_{11}$
11.	$^{3}/_{4} + {}^{2}/_{3}$	12.	$^{2}/_{3} + {}^{1}/_{5}$	13.	$^{3}/_{4} + {}^{3}/_{5}$	14.	$^{4}/_{5} + {}^{1}/_{3}$	15.	$4^{3}/_{5} + 3^{2}/_{3}$
16.	$^{4}/_{5} - {}^{2}/_{3}$	17.	$^{5}/_{8} - {}^{2}/_{5}$	18.	$^{7}/_{8} - {}^{5}/_{7}$	19.	$5^{1}/_{5} - 3^{3}/_{5}$	20.	$7^{1}/_{5} - 3^{2}/_{3}$

21. If $^{3}/_{8}$ of a pizza has been eaten, how much is left to eat?
22. Two pizzas are bought. If $^{7}/_{8}$ of the first pizza is eaten, how much is left?
23. David eats $^{1}/_{4}$ of a pizza and Abby eats $^{1}/_{5}$ of the pizza. What fraction of the pizza has been eaten?

24. Paul has a piece of wood $5^{1}/_{4}$ metres long. If he cuts $2^{3}/_{4}$ metres off one end, how long is the piece of wood that is left?

25. Two pieces of wood measured $3^{2}/_{5}$ metres and $4^{1}/_{3}$ metres long. What is the combined length of these two lengths of wood?

26. **Create** word problems involving **adding** and **subtracting fractions**.
Exchange your questions with a classmate and compare answers.



‘In-class’ Worksheet

Teaching Notes & Answers

How to use this section:
Teaching notes are enclosed in a box with a ‘push-pin’ at the top left corner. The teaching notes precede the answers for each worksheet / task. The teaching notes have been included to provide assistance and background information about each topic or unit of work.

Introduction:

The topic of **Number** is concerned with exploring number, gaining an understanding of the meaning of negative numbers and special numbers such as prime numbers, factors, multiples, squares, square roots and other powers. The ability to convert between fractions, decimals and percentages is explored, plus activities involving the finding of fractions and percentages of a quantity. Being able to estimate quickly and accurately and checking the reasonableness of the answer is a useful skill that is explored. The setting out, and successful completion of addition, subtraction and multiplication problems involving decimals is also investigated, leading into the conventions for the order of operations.

The importance of gaining a good understanding of the ‘basic number facts’, the ability to add, subtract, divide and multiply with confidence, should not be underestimated, as all strands of mathematics involve some, if not all, of the four basic skills.

Worksheets 1 & 2

Adding and subtracting whole numbers:
Multiplying and dividing whole numbers:
Special numbers:

In **Tasks 1 & 2**, pupils are to copy two number crosses, then complete some addition or subtraction and multiplication or division problems as a revision activity. The copying of the number crosses is also an important skill.

In **Task 3**, pupils are to create his / her own addition / subtraction and multiplication / division number crosses to exchange with a classmates.

In **Tasks 4 & 5**, pupils are to complete sentences about definitions of the special numbers; **factors**, **multiples**, **prime numbers** and **prime factors**. Pupils are then to work with each group to consolidate their understanding of the properties of these numbers.

Task 1

1. & 2.

8	2	6	■	■	1	8	5	0
1	■	7	5	4	5	■	7	■
6	■	■	9	■	7	9	3	■
2	2	3	2	■	5	■	9	7
■	9	■	2	5	0	9	■	2
7	6	3	■	4	■	5	6	4
1	■	9	1	2	■	7	■	5
5	■	4	■	9	2	0	4	1

Task 2

1. & 2.

7	7	7	■	■	1	7	7	3
1	■	4	8	1	9	■	4	■
5	6	■	5	■	1	■	4	5
■	5	■	6	0	4	5	■	0
3	1	9	■	■	■	1	2	5
3	2	3	7	5	■	4	■	2
6	■	■	4	2	7	0	9	0

Task 4

1. prime 2. multiples 3. factor 4. prime factor 5. 1, 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47
6. 71, 73, 79, 83 7. 3, 13, 19, 29, 37, 43, 53 8. 11 + 7 = 18, 13 + 5 = 18 9. 19 + 5 = 24, 1 + 23 = 24, 7 + 17 = 24, 11 + 13 = 24 10. 29 + 1 = 30, 17 + 13 = 30, 23 + 7 = 30, 11 + 19 = 30 11. 31 + 5 = 36, 29 + 7 = 36, 23 + 13 = 36, 17 + 19 = 36 12. 1 + 41 = 42, 5 + 37 = 42, 11 + 31 = 42, 13 + 29 = 42 13. 43 + 1 = 44, 3 + 41 = 44, 7 + 37 = 44, 13 + 31 = 44, 39 + 5 = 44 14. 47 + 1 = 48, 5 + 43 = 48, 7 + 41 = 48, 11 + 37 = 48, 17 + 31 = 48, 19 + 29 = 48, 31 + 17 = 48 15. 47 + 3 = 50, 43 + 7 = 50, 37 + 13 = 50, 31 + 19 = 50 16. 53 + 1 = 54, 7 + 47 = 54, 43 + 11 = 54, 41 + 13 = 54, 37 + 17 = 54, 31 + 23 = 54 17. 59 + 1 = 60, 7 + 53 = 60, 13 + 47 = 60, 17 + 43 = 60, 19 + 41 = 60, 29 + 31 = 60 18. 61 + 5 = 66, 7 + 59 = 66, 13 + 53 = 66, 19 + 47 = 66, 23 + 43 = 66, 29 + 37 = 66 19. 3 + 67 = 70, 11 + 59 = 70, 13 + 57 = 70, 17 + 53 = 70, 23 + 47 = 70, 29 + 41 = 70 20. 7, 14, 21, 28, 35, 42, 49, 56, 63, 70
21. 12, 24, 36, 48, 60, 72, 84, 96, 108, 120 22. 14, 28, 42, 56, 70, 84, 98, 112, 126, 140 23. 17, 34, 51, 68, 85, 102, 119, 136, 153, 170 24. 20, 40, 60, 80, 100, 120, 140, 160, 180, 200 25. 30, 60, 90, 120, 150, 180, 210, 240, 270, 300
26. 9, 18, 27, 36, 45 27. 44, 55, 66, 77 28. 45, 60, 75, 90 29. 54, 72, 90, 108 30. 100, 125, 150
31. 2, 3, 4, 6, 12 32. 2, 4, 5, 10, 20 33. 2, 3, 4, 6, 9, 12, 18, 36 34. 2, 3, 4, 6, 8, 12, 16, 24, 48
35. 2, 3, 6, 11, 22, 33, 66 36. 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72 37. 3 x 5 = 15 38. 3 x 13 = 39
39. 5 x 11 = 55 40. 7 x 13 = 91 41. 7 x 17 = 119 42. 13 x 11 = 143

Task 5

1. 55 2. 52 3. 15

Worksheets 3 & 4

Order of operations:
Word problems involving order of operations:

In **Task 6**, pupils are to use the order of operation convention to calculate answers. The letters **BODMAS** or **BEDMAS** are a good way to remember the order of doing the calculation. At this level, problems involving exponent (powers) have been left out.
The order implies the following ...

1. Look for brackets. If brackets are there, work out what is inside the brackets first.
   Example: 21 + (4 + 3 × 6)
2. Look for multiplication and division next and work out each one out, as you read from left to right. Both are of equal importance. The order in which they are written in BODMAS or BEDMAS **DOES NOT** imply that dividing should be done before multiplying. At this point, only adding and / or subtracting will be left.
3. Look for addition and subtraction next and work these out in the order they appear as you read from left to right. Both are of equal importance. The order in which they are written in BODMAS or BEDMAS **DOES NOT** imply that adding should be done before subtracting.

The final part of the task has questions where the operation signs have been left out and pupils are to work out the missing signs, using the convention of order of operations.

In **Task 6**, pupils are to utilise the order of operation rules to solve word problems.

Task 6

1. 95 2. 37 3. 97 4. 20 5. 4 6. 87 7. 28 8. 19 9. 17 10. 34 11. 66 12. 33 13. 40
14. 71 15. 34 16. 18 17. 49 18. 37 19. 55 20. 130 21. 55 22. 19 23. 103 24. 49 25. 8
26. 24 27. 133 28. 7 29. 35 30. 83 31. 35 32. 11 33. 49 34. 58 35. 32 36. 33 37. 33
38. 47 39. 10 40. 50 41. 75 42. 85 43. 30 44. 65 45. 24 46. 287 47. 64 48. 144
49. 68 50. 54 51. 150 52. 200 53. 16 54. 75 55. 21 56. 10 57. 23 58. 16 59. 18
60. 40 61. 2 + 3 x 5 = 17 62. 5 x 3 + 6 = 21 63. 10 - 4 + 2 = 8 64. 12 ÷ 3 x 7 = 28 65. 9 + 10 ÷ 2 = 14
66. 23 - 4 x 5 = 3 67. 18 ÷ 6 + 9 = 12 68. 8 x 3 + 7 = 31 69. 21 - 18 ÷ 3 = 15 70. 27 ÷ 9 + 7 = 10
71. 7 + 4 x 6 = 31 72. 19 - 36 ÷ 12 = 16

Task 7

1. $66.50 2. $91 3. $80.50 4. $161 5. $157.50 6. $147 7. $168 8. $175 9. $259
10. 5 C.D.'s 11. $28.50 12. $23 13. List A - $28.25, List B - $27.20, List C - $30.40, List D - $49.70, List E - $54.15, List F - $36.75, List G - $50.93, List H - $52.40

Worksheets 5 & 6

Multiplying and dividing by powers of 10:
Converting between standard form and decimal form:

In **Task 8**, pupils are to multiply and divide by powers of 10. The aim is for pupils to come up with simple rules that involve moving the decimal point left or right, a number of spaces based on the number of zeros in the power of 10, therefore the actual calculation does not need to be done. Remind pupils where the decimal points are, if they are not shown. This task introduces the concept of standard form. *Example:* 1.2×10^4, 3.93×10^{-2} Word problems are included.

In **Task 9**, pupils are to convert between numbers written in standard form and as decimals. The aim is for pupils to be able to do this by moving the decimal point the required number of places to the right or left depending on whether it is a postive or negative power of 10. Remember that dividing by a postive power of 10 is the same as multiplying by a negative power of 10. *Example:* $2.3 \div 10^5 = 2.3 \times 10^{-5}$

Task 8

1. 69 2. 23000 3. 8400 4. 600 5. 230 6. 4090 7. 94300 8. 80500 9. 963000 10. 8
11. 384000 12. 5.9 13. 370000 14. 67000 15. 43000000 16. 520000 17. To multiply by 10 move decimal point 1 place to the right, to multiply by 100 move decimal point 2 places to the right and so on. 18. 0.096
19. 0.0013 20. 0.00063 21. 0.934 22. 0.41 23. 0.0437 24. 6.728 25. 0.001863 26. 0.952
27. 0.0000085 28. 0.00409 29. 0.0096 30. 0.000076 31. 0.0069 32. 0.0000063 33. 0.0025
34. To divide by 10 move decimal point 1 place to the left, to divide by 100 move decimal point 2 places to the left and so on. 35. 25900 36. 0.00437 37. 7210000 38. 0.006074 39. 0.0000907 40. 73610000
41. 0.0000542 42. 4021000 43. 3600 seats 44. 12.75 rows 45. $18.00 46. $0.54 47. $19000
48. $0.23 49. $125000 50. $1.65 51. $12330 or 1233000 cents 52. $0.1275 or 12.75 cents

Task 9

1. 900 2. 0.06 3. 53000 4. 0.0066 5. 0.0027 6. 930000 7. 0.0019 8. 240000 9. 3240
10. 0.000193 11. 347000 12. 0.00912 13. 0.00000763 14. 534000 15. 0.000904 16. 735000
17. 0.00094 18. 0.00306 19. 1260000 20. 0.000393 21. 310100 22. 0.0006327 23. 0.00004106
24. 631800 25. 2.5×10^3 26. 4.2×10^{-2} 27. 4.25×10^4 28. 5.6×10^{-3} 29. 5.84×10^5 30. 2.351×10^3
31. 3.4×10^{-4} 32. 6.315×10^7 33. 5.862×10^2 34. $2.54\ 10^{-5}$ 35. 9.5663×10^2 36. 3.9×10^{-5}
37. 4.5×10^{-6} 38. 8.562×10^7 39. 4.126×10^{-3} 40. 9.63545×10^3 41. 9.523×10^8 42. 2.105×10^{-5}
43. 9.31×10^{-6} 44. 3.792068×10^4 45. 3.625×10^{-5} 46. 3.00495×10^7 47. 1.204504×10^8 48. 6.9×10^{-9}
49. 86400 sec in 1 day = 8.64×10^4, 604800 sec in 1 week = 6.048×10^5, 31449600 sec in 1 year = 3.14496×10^7
50. 350000 km 51. 5100 km in 1 day = 5.1×10^3 km, 35700 km in 1 week = 3.57×10^4 km, 1856400 km in 1 year = 1.8564×10^6 km 52. 1440 containers 53. 28800 litres = 2.88×10^4 litres 54. 130 litres per hour
55. 46300 cards each day 56. 65000 letters = 6.5×10^4

Worksheets 7 & 8

Approximations, estimations and rounding using decimal places:
Approximations, estimations and rounding using significant figures:

In **Task 10**, pupils are to round numbers to various decimal places as requested. Note that when rounding, 5's round up. *Example:* 2.15 rounds to 2.2 1 d.p., 9.235 rounds to 9.24 2 d.p. etc. All counting begins at the decimal point. Pupils are to calculate totals and round to the decimal place requested. Rounding / estimating is a useful skill, especially as pupils tend to believe answers they get on a calculator. By having an understanding of and the ability to estimate, calculator errors can be picked up. Word problems involving rounding using decimal places are included.

In **Task 11**, pupils are to round numbers to various significant figures as requested. Counting begins from the first non-zero from the left, following the procedures outlined on Worksheet 8.

Task 10

1. 1.2 , 1.24, 1.236 2. 3.6, 3.60, 3.604 3. 9.8, 9.75, 9.753 4. 10.6, 10.63, 10.635 5. 0.1, 0.06, 0.056
6. 23.5, 23.51, 23.507 7. 18.5, 18.46, 18.463 8. 53.4, 53.42, 53.422 9. 143.9, 143.89, 143.889 10. 6.4, 6.39, 6.385 11. 0.1, 0.10, 0.096 12. 9.3, 9.26, 9.260 13. 186.1, 186.07, 186.071 14. 1.0, 1.00, 1.001 15. 56.8, 56.76, 56.756 16. 5602.7, 5602.70, 5602.703 17. 0.1, 0.05, 0.053 18. 6.4, 6.41, 6.409 19. 67.2, 67.16, 67.160
20. 1.0, 0.96, 0.964 21. 2.7, 2.72, 2.720 22. 9058.1, 9058.10, 9058.098 23. 0.0, 0.01, 0.009
24. 9.5, 9.46, 9.462 25. 703.0, 702.96, 702.964 26. 0.0, 0.00, 0.001 27. 4.6, 4.60, 4.601 28. 1.0, 1.00, 1.000
29. 56.0, 56.00, 56.000 30. 132.0, 132.00, 132.000 31. 24.4, 24.44 32. 25.1, 25.07 33. 3.0, 3.04
34. 5.1, 5.06 35. 5.3, 5.26 36. 4.5, 4.49 37. 16.0, 16.01 38. 7.1, 7.12 39. 28.2, 28.17 40. 7.1, 7.08
41. 30.7, 30.67 42. 8.1, 8.09 43. 27.1, 27.10 44. 15.9, 15.95 45. 2.6, 2.61 46. 6.9, 6.86 47. 11.1, 11.11
48. 10.1, 10.09 49. 5.6, 5.56 50. 6.4, 6.39 51. 4.8, 4.80 52. 3.6, 3.57 53. 21.2, 21.20 54. 20.9, 20.93
55. 68.237, 68.956, 69.048, 69.378, 69.637, 70.653, 71.284, 71.632, 72.564, 75.396 56. 68.24, 68.96, 69.05, 69.38, 69.64, 70.65, 71.28, 71.63, 72.56, 75.40 57. 1 min 63.79 sec, 1 min 56.35 sec, 1 min 52.09 sec, 1 min 51.95 sec, 1 min 51.63 sec, 1 min 50.27 sec, 1 min 49.93 sec, 1 min 49.76 sec, 1 min 48.74 sec, 1 min 45.72 sec
58. 1 min 63.8 sec, 1 min 56.4 sec, 1 min 52.1 sec, 1 min 52.0 sec, 1 min 51.6 sec, 1 min 50.3 sec, 1 min 50.0 sec, 1 min 49.8 sec, 1 min 48.7 sec, 1 min 45.7 sec 59. 125270 mL, 125.27 L 60. 125.3 L 61. $218.75

Task 11

1. 4000, 4300, 4260 2. 90000, 94000, 93700 3. 40000, 44000, 44000 4. 8000, 7600, 7590 5. 600000, 650000, 645000 6. 0.05, 0.052, 0.0524 7. 0.009, 0.0085, 0.00853 8. 0.0005, 0.00046, 0.000465
9. 0.5, 0.49, 0.486 10. 4, 3.7, 3.70 11. 0.1, 0.096, 0.0958 12. 9, 9.3, 9.26 13. 200, 190, 186 14. 1, 1.0, 1.00
15. 60, 57, 56.8 16. 6000, 5600, 5600 17. 0.05, 0.053, 0.0530 18. 6, 6.4, 6.41 19. 200, 170, 167
20. 1, 0.96, 0.964 21. 3, 2.7, 2.72 22. 60, 58, 58.1 23. 0.009, 0.0087, 0.00869 24. 9, 9.5, 9.46 25. 300, 320, 323 26. 0.03, 0.031, 0.0305 27. 5, 4.6, 4.60 28. 500, 490, 485 29. 30, 27, 27.0 30. 0.7, 0.65, 0.650
31. 6000, 5600 32. 4000, 4200 33. 60000, 63000 34. 90, 92 35. 100, 140 36. 600, 580 37. 600, 610
38. 900, 880 39. 3000, 2600 40. 7.1 41. 20, 18 42. 0.08, 0.080 43. 1000, 1200 44. 7000, 7200
45. 100, 110 46. 100, 110 47. 700, 650 48. 1000, 1100 49. 1000, 1500 50. 10, 11 51. 5, 4.8
52. 4, 3.9 53. 30, 33 54. 30, 30.4 55. 130, 260, 190, 220, 460, 97, 380, 240, 170, 81 = 2228km 56. 2213km
57. 15 km 58. 12000, 9900, 13000, 11000, 10000, 10000, 12000, 10000, 13000, 10000 = 110900 people
59. 111165 people 60. 265 people

Worksheet 9

Finding squares and estimating square roots:

In **Task 12**, pupils are to square numbers, rounding to 1 d.p. or 2 d.p. The opposite of squaring a number is to find the square root of a number. This is first to be attempt using a trial and error method, find estimates accurate to 2 d.p. Using the square root key on a calculator, exact answers rounded to 4 d. p. are to be found. Word problems involving find square roots are included.

Task 12

1. 39.7 2. 74.0 3. 110.3 4. 136.9 5. 158.8 6. 334.9 7. 2190.2 8. 3564.1 9. 9293.0 10. 12723.8
11. 5.57 12. 48.30 13. 24.80 14. 94.67 15. 93.12 16. 50.84 17. 0.13 18. 92.35 19. 74.82
20. 9.59 21 to 45 No answers supplied 46. 4.4721, 5.1962, 6.3246, 7.4162, 7.7460, 8.3066, 8.6603, 8.9443, 9.2195, 10.4881, 11.4018, 12.2474, 12.9615, 14.1421, 15.8114, 3.1145, 3.5917, 5.8224, 6.5498, 8.7636, 0.9747, 7.5353, 11.8068, 23.7466, 29.3718 47. 16 cobble stones 48. 62.5 cm x 62.5 cm 49. $320 50. 12 tiles
51. 144 tiles 52. $93.60 53. 8 tiles 54. 2.4 m x 2.4 m

Expressing a fraction as a decimal:
Expressing a decimal as a fraction:
Expressing a decimal as a percentage:
Expressing a percentage as a decimal:
Converting between fractions, decimals and percentages:

In **Task 13**, pupils are to convert fractions to decimals by dividing the numerator by the denominator. Setting out the division problem correctly is important and zeros are added after the decimal point, with the division continuing until there is no remainder or a repeating pattern is found, indicated by a small dot to the top right of the repeating digit(s).. Pupils are to explore the decimal patterns created when various fractions are converted to decimals.

In **Task 14**, pupils are to perform the opposite conversion, decimals to fractions, which is less difficult as the denominator will be 10, 100, 1000, etc. depending on the number of digits after the decimal points. The fractions created will be either $^1/_{10}$'s, $^1/_{100}$'s, $^1/_{1000}$'s or $^1/_{10000}$'s etc.

Example: 0.5 = $^5/_{10}$, 0.05 = $^5/_{100}$, 0.005 = $^5/_{1000}$, 0.0005 = $^5/_{10000}$

In **Task 15**, pupils are to convert decimals to percentages. As percentages are out of 100, this can be done by multiplying the decimal by 100, that is, move the decimal point two places to the right.

In **Task 16**, pupils are to convert percentages to decimals. This can be done by dividing the percentage by 100, resulting in the decimal point moving two places to the left. Remind pupils that if there is no decimal point shown in a number, then the decimal point will be at the right hand end of the number. *Example:* 65% has the decimal point after the 5, that is, 65.0%.

In **Task 17**, pupils are to test their skills at converting between fractions, decimals and percentages, as they match examples of fractions, decimals and percentages.

Task 13

1. 0.2 2. 0.125 3. 0.3 4. 0.6 5. 0.875 6. 0.5714 7. 0.06 8. $0.83^{\cdot}$ 9. 0.5 10. 0.6 11. $0.583^{\cdot}$ 12. 0.75 13. $0.3^{\cdot}$ 14. 0.9 15. 0.5 16. 0.25 17. 0.625 18. $0.4^{\cdot}$ 19. 0.75 20. $0.46^{\cdot}$ 21. $0.3^{\cdot}$ 22. 0.25 23. 0.25 24. 0.6 25. 0.2 26. $0.0\dot{9}$, $0.1\dot{8}$, $0.2\dot{7}$, $0.3\dot{6}$, $0.4\dot{5}$, $0.5\dot{4}$, $0.6\dot{3}$, $0.7\dot{2}$, $0.8\dot{1}$, $0.9\dot{0}$ 27. $0.1^{\cdot}$, $0.2^{\cdot}$, $0.3^{\cdot}$, $0.4^{\cdot}$, $0.5^{\cdot}$, $0.6^{\cdot}$, $0.7^{\cdot}$, $0.8^{\cdot}$ 28. $0.1\dot{4}285\,1$, $0.2\dot{8}5714\dot{2}$, $0.4\dot{2}8571\dot{4}$, $0.5\dot{7}1428\dot{5}$, $0.7\dot{1}4285\dot{7}$, $0.8\dot{5}7142\dot{8}$

Task 14

1. $^8/_{10}$, $^4/_5$ 2. $^7/_{100}$ 3. $^6/_{1000}$, $^3/_{500}$ 4. $^{28}/_{100}$, $^7/_{25}$ 5. $^{15}/_{1000}$, $^3/_{200}$ 6. $^{36}/_{100}$, $^9/_{25}$ 7. $^4/_{10}$, $^2/_5$ 8. $^{85}/_{100}$, $^{17}/_{20}$ 9. $^{56}/_{100}$, $^{14}/_{25}$ 10. $^2/_{10}$, $^1/_5$ 11. $^{275}/_{1000}$, $^{11}/_{40}$ 12. $^{125}/_{10000}$, $^1/_{80}$ 13. $^{425}/_{1000}$, $^{17}/_{40}$ 14. $^6/_{10}$, $^3/_5$ 15. $^{96}/_{100}$, $^{24}/_{25}$ 16. $^9/_{10}$ 17. $^{785}/_{1000}$, $^{157}/_{200}$ 18. $^5/_{10}$ $^1/_2$ 19. $^{106}/_{1000}$, $^{53}/_{500}$ 20. $^4/_{10000}$, $^1/_{2500}$ 21. $^{87}/_{100}$ 22. $^9/_{100}$ 23. $^{903}/_{1000}$ 24. $^{72}/_{100}$, $^{18}/_{25}$ 25. $^{825}/_{1000}$, $^{33}/_{40}$ 26. $^{12}/_{1000}$, $^3/_{250}$ 27. $^7/_{10}$ 28. $^{64}/_{100}$, $^{16}/_{25}$ 29. $^{48}/_{1000}$, $^{12}/_{250}$ 30 $^9/_{1000}$

Task 15

1. 26% 2. 8% 3. 1.2% 4. 27% 5. 2.9% 6. 74% 7. 40% 8. 75% 9. 52% 10. 87% 11. 26.7% 12. 37% 13. 8.5% 14. 90% 15. 70% 16. 65% 17. 12.5% 18. 60% 19. 40.3% 20. 2% 21. 3.6% 22. 210% 23. 345% 24. 4.1% 25. 8.3% 26. 30% 27. 0.5% 28. 6.3% 29. 186% 30. 69%

Task 16

1. 0.65 2. 0.5 3. 0.09 4. 0.15 5. 0.45 6. 0.87 7. 0.55 8. 1 9. 0.17 10. 0.05 11. 0.52 12. 0.4 13. 0.93 14. 0.8 15. 0.23 16. 0.75 17. 0.66 18. 0.3 19. 0.375 20. 0.805 21. 0.018 22. 1.4 23. 0.006 24. 1.37 25. 3.06 26. 0.009 27. 0.0395 28. 0.96 29. 0.548 30. 0.849

Task 17

Fraction	Decimal	Percentage
$^1/_4$	0.25	25%
$^1/_3$	$0.3^{\cdot}$	33.3%
$^2/_5$	0.4	40%
$^1/_2$	0.5	50%
$^2/_3$	$0.6^{\cdot}$	$66.6^{\cdot}\%$
$^3/_4$	0.75	75%

Worksheets 12 & 13

Finding a percentage of a quantity:
Multiplying and dividing decimals:

In **Task 18**, pupils are to find percentages of a quantity. This can be done using either of the two ways illustrated on the worksheet. Word problems are included and pupils are to create and exchange word problems among themselves.

In **Task 19**, pupils are to multiply and divide decimals, utilising skills they have learnt over the past few years. Setting out is important and the correct setting out will help to avoid errors.

Task 18

1. 30 2. 7.5 3. 4.8 4. 9 5. 44 6. 48 7. 33.6 8. 54 9. 13.6 10. 7.8 11. 67.2 12. 30
13. 21 14. 16.8 15. 36 16. 72 17. 45 18. 39.6 19. 32.4 20. 76 21. 7.5 22. 31.2 23. 108
24. 147 25. $352.50 26. $1997.50 27. 20% 28. 36 days 29. 54 days 30. 10% 31. 4.8 hours
32. 9.6 hours 33. 25% 34. 5184m 35. 2016m, 28% 36. 29.7m 37. 24.3m, 45% 38. 378 books
39. 168 books 40. 15%

Task 19

1. 35.436 2. 39.7 3. 116.1 4. 871.3 5. 3416 6. 31.5 7. 1607.05 8. 38.35 9. 80.7 10. 56.24
11. 273.55 12. 98.4 13. 45.072 14. 296.325 15. 2.8536 16. 861 17. 4623 18. 0.25857 19. 324.9
20. 0.017028 21. 0.01888 22. 8043 23. 542 24. 0.241659 25. $8603.60, $15056.30, $25810.80
26. $0.014 27. $11.20, $16.80, $37.80 28. 5000 copies, 7500 copies, 11200 copies 29. 235.2 km
30. 2512.5 km 31. $97.38 32. 50 L 33. 106.25 km, 255 km, 510 km 34. 6431.25 sec 35. 107.1875 min
or 107 min 11.25 sec 36. 93.5 sec

Worksheets 14 to 16

Understanding negative numbers:
Understanding and using number lines:
More negative numbers:
Bank overdrafts:

In **Task 20**, pupils are introduced to **negative numbers**, by way of everyday events that can be represented as negative numbers. Calculations involving temperature changes is a particularly good way to introduce negative numbers as weather forecasts include the liklihood of frosts, thus highlighting the use of negative numbers.

In **Task 21**, pupils are introduced to **number lines** that include negative numbers. Pupils should be familiar with number lines as they form part of x-y graphs. Using the number line, including negative numbers, pupils are to add positive and negative number together. Adding a negative number results in a movement to the left along the number line. The starting point on the number line is the first number that is in the question.

In **Task 22**, small groups of pupils are to play a number game with a die (dice). The odd numbers on the die are negative and the even numbers are positive. Pupils are to keep a running total as they roll the die 5 times. The pupil with the lowest score wins.

In **Task 23**, pupils are to further develop their understanding of negative numbers as they add larger positive and negative numbers.

In **Task 24**, pupils are to calculate a running total of a bank balance that goes in and out of overdraft. This task is a good example of negative numbers in daily use. On a bank statement, a debit balance is negative and a credit balance is positive.

Task 20

1. $^{-}3, ^{-}2, ^{-}1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10$ 2. $^{-}2$ floor 3. 4th floor 4. 20 m 5. 4 m 6. 6, 12, 16, 18
7. $^{-}4, ^{-}8, ^{-}10, ^{-}16, ^{-}20$ 8. $^{-}14$ 9. $^{-}3$ 10. 5.5°C approx 11. 4°C 12. 8°C 13. $^{-}3$°C 14. $^{-}7$°C 15. 4°C
16. $^{-}7$°C 17. $^{-}8$°C 18. 4°C 19. $^{-}5$°C 20. $^{-}9$°C 21. $^{-}3.5$°C 22. 4.4°C 23. $^{-}1.3$°C 24. 2.1°C

Task 21

1. 8 2. $^{-}5$ 3. $^{-}4$ 4. $^{-}2$ 5. $^{-}11$ 6. $^{-}11$ 7. 4 8. $^{-}3$ 9. 1 10. 2 11. $^{-}1$ 12. $^{-}3$ 13. $^{-}3$ 14. $^{-}3$
15. 6 16. $^{-}4$ 17. 9 18. $^{-}7$ 19. 7 20. $^{-}6$ 21. 3 22. $^{-}9$ 23. $^{-}11$ 24. $^{-}11$ 25. $^{-}8$ 26. 8
27. 10 28. $^{-}6$ 29. 8 30. $^{-}1$ 31. $^{-}1$ 32. 10 33. $^{-}5$ 34. 12 35. $^{-}4$ 36. $^{-}6$ 37. 2 38. 10
39. $^{-}11$ 40. $^{-}19$ 41. $^{-}22$ 42. $^{-}14$ 43. 5 44. 11 45. $^{-}4$ 46. $^{-}6$

Task 23

1. $10 + ^{-}11 = ^{-}1$ 2. $10 + ^{-}13 = ^{-}3$ 3. $16 + ^{-}12 = 4$ 4. $22 + ^{-}15 = 7$ 5. 1 6. $^{-}3$ 7. $^{-}1$ 8. 6 9. 3 10. 3
11. $^{-}7$ 12. 16 13. 15 14. 0 15. $^{-}9$ 16. 9 17. $^{-}14$ 18. $^{-}11$ 19. 3 20. $^{-}77$ 21. 12 22. 48
23. 76 24. 24 25. $^{-}1.3$ 26. 1.8 27. $^{-}5.8$ 28. $^{-}43.2$ 29. $^{-}15.4$ 30. $^{-}59.9$ 31. 7.9 32. 58.9
33. $^{-}18.5$ 34. 4.8

Task 24

Balance = \$112.50, $^{-}$\$72.50, $^{-}$\$17.90, $^{-}$\$87.55, $^{-}$\$1.75, \$48.25, \$22.50, \$92.70, $^{-}$\$107.25

Worksheets 17 & 18

Expressing a quantity as a fraction or as a percentage of a whole:
Increasing and decreasing by a given percentage:

In **Task 25**, pupils are to express a quantity as a fraction of a whole and then convert the fraction to a percentage, or vica versa.

In **Task 26**, pupils are to calculate a percentage of a number and then increase or decrease the number by this amount. The idea of GST, discounts or mark-up, wholesale and retail prices all illustrates practical uses of using percentages. Word problems are included.

Task 25

1. $^{2}/_{8} = ^{1}/_{4} = 25\%$ 2. $^{6}/_{8} = ^{3}/_{4} = 75\%$ 3. $^{4}/_{10} = ^{2}/_{5} = 40\%$ 4. $^{4}/_{12} = ^{1}/_{3} = 33^{1}/_{3}\%$ 5. $^{65}/_{100} = ^{13}/_{20} = 65\%$
6. $^{35}/_{100} = ^{7}/_{20} = 35\%$ 7. $^{19}/_{50} = 38\%$ 8. $^{17}/_{20} = 85\%$ 9. $^{9}/_{25} = 36\%$ 10. $^{3}/_{5} = 60\%$ 11. $^{18}/_{40} = ^{9}/_{20} = 45\%$
12. \$17.55 13. $^{3}/_{5} = 60\%$ 14. $40\% = ^{2}/_{5}$ 15. 16 min 40 sec 16. $^{150}/_{240} = ^{5}/_{8} = 62.5\%$ 17. \$108 18. 27500
19. $^{21000}/_{27500} = ^{42}/_{55} = 76.36\%$ 20. $^{6500}/_{27500} = ^{13}/_{55} = 23.63\%$ 21. 92%

Task 26

1. 33 2. 54 3. 64 4. 78 5. 63 6. 135 7. 36 8. 72 9. 138 10. 76.5 11. 312 12. 104.5
13. 13 14. 162 15. 76 16. 173.6 17. 357 18. 70 19. 384.25 20. 45 21. 78.625 22. 30.375
23. 148.42 24. 486.875 25. $275 26. $2475 27. $20475, $23047.50, $26565, $29295, $34072.50
28. $393.75 29. $99.90 30. 199.95 31. $2947.50 32. $1743.75 33. $15.92 34. $28.48
35. $38.32 36. $7.12 37. $11.80 38. $1890 39. $66.15 40. $362.25 41. $275.63 42. $1055.25
43. No answers supplied

Worksheets 19 to 22

Writing and simplifying ratios:
Writing ratios as fractions:
Sharing quantities by a given ratio:
Creating equivalent fractions and simplifying fractions:
Improper fractions and mixed numbers:
Adding and subtracting fractions:

In **Task 27**, pupils are to write information within a statement as a ratio. The order of the numbers in the ratio will depend on the order in the statement. *Example:* In Room 7 there are 13 boys and 15 girls. What is the ratio of girls to boys in Room 7? Answer: 15 : 13

In **Task 28**, pupils are to rewrite ratios as fractions, then simplify if possible.

In **Task 29**, pupils are to share quantities by a given ratio, using the steps as outlined in Worksheet 20. Word problems involving ratios have been included.

In **Task 30**, pupils are to explore equivalent fractions. A fraction of a group of diagrams has been shaded and pupils express the shaded diagrams as a fraction of the group. A series of progressive exercises guide pupils through the process of working out and creating equivalent fractions. Some large fraction can be simplied to create smaller equivalent fractions. This can be done by dividing the numerator and denominator by the same number.

In **Task 31**, pupils are to convert between improper and mixed numbers, using the steps outlined in Worksheet 22.

In **Task 32**, pupils are to add and subtract fractions. Fractions can only be added or subtracted if the denominators are the same. This is done by creating equivalent fractions. Word problems have been included.

Task 27

1. 5 : 7 2. 5 : 20 = 1 : 4 3. 40 : 60 = 2 : 3 4. 3 : 27 = 1 : 9 5. 78 : 14 = 39 : 7 6. 45 : 90 = 1 : 2
7. 15 : 18 = 5 : 6 8. 6 : 30 = 1 : 5 9. 85 : 600 = 17 : 120 10. 32 : 4 = 8 : 1 11. 1 : 5 12. 2 : 1 13. 3 : 5
14. 9 : 20 15. 9 : 11 16. 4 : 1 17. 7 : 5 18. 4 : 7 19. 9 : 5 20. 4 : 9 21. 3 : 4 22. 3 : 1 23. 3 : 8
24. 8 : 3 25. 7 : 12 26. 1 : 3 : 2 27. 7 : 3 : 9 28. 2 : 4 : 1 29. 12 : 5 : 2 30. 3 : 4 : 8

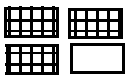
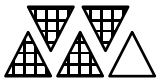
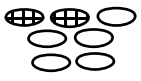
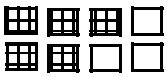
Task 28

1. $^{14}/_{28} = {}^{1}/_{2}$ 2. $^{15}/_{30} = {}^{1}/_{2}$ 3. $^{24}/_{36} = {}^{2}/_{3}$ 4. $^{15}/_{40} = {}^{3}/_{8}$ 5. $^{33}/_{77} = {}^{3}/_{7}$ 6. $^{12}/_{32} = {}^{3}/_{8}$ 7. $^{21}/_{42} = {}^{1}/_{2}$
8. $^{27}/_{63} = {}^{3}/_{7}$ 9. $^{45}/_{60} = {}^{3}/_{4}$ 10. $^{30}/_{120} = {}^{1}/_{4}$ 11. $^{50}/_{72} = {}^{25}/_{36}$ 12. $^{84}/_{72} = {}^{7}/_{6}$ 13. $^{56}/_{88} = {}^{7}/_{11}$ 14. $^{108}/_{81} = {}^{4}/_{3}$
15. $^{49}/_{84} = {}^{7}/_{12}$ 16. $^{120}/_{65} = {}^{24}/_{13}$ 17. $^{150}/_{25} = {}^{6}/_{1}$ 18. $^{26}/_{39}$ 19. $^{72}/_{160} = {}^{9}/_{20}$ 20. $^{96}/_{108} = {}^{8}/_{9}$

Task 29

1. 9 2. 7 3. 7 4. 11 5. 19 6. 8 7. 14 8. 15 9. 21 10. 23 11. 15 12. 19 13. 20 14. 20
15. 21 16. \$10 : \$40 17. 9mm : 18mm 18. \$8 : \$40 19. 27kg : 36kg 20. \$24 : \$60 21. 84kg : 24kg
22. \$52 : \$65 23. 8mg : 88mg 24. \$33 : \$55 25. 40kL : 24kL 26. \$16 : \$56 27. 49L : 7L
28. \$121 : \$22 29. 120cm : 80cm 30. \$90 : \$180 31. 40 children 32. \$6000 33. \$4687.50 : \$7812.50
34. 2556 supporters 35. 20 : 100 = 1 : 5 36. \$100 37. \$1000 38. 27 weeks 39. 0.6 : 1.8 : 1.2
40. 900L : 600L : 1200L

Task 30

1.  2.  3.  4.  5. 

6. $^{3}/_{5}$ 7. $^{4}/_{8} = {}^{1}/_{2}$ 8. $^{3}/_{7}$ 9. $^{6}/_{9} = {}^{2}/_{3}$ 10. $^{2}/_{8} = {}^{1}/_{4}$ 11. 7 12. 25 13. 5 14. 15 15. 8 16. 12
17. 18 18. 30 19. 24 20. 24 21. 48 22. 10 23. 55 24. 56 25. 36 26. 24 27. 24 28. 27
29. 49 30. 40 31. $^{3}/_{4}$ 32. $^{2}/_{3}$ 33. $^{1}/_{2}$ 34. $^{1}/_{3}$ 35. $^{1}/_{4}$ 36. $^{2}/_{3}$ 37. $^{1}/_{6}$ 38. $^{2}/_{5}$ 39. $^{3}/_{4}$ 40. $^{4}/_{5}$
41. $^{2}/_{5}$ 42. $^{5}/_{6}$ 43. $^{1}/_{5}$ 44. $^{1}/_{6}$ 45. $^{1}/_{6}$ 46. $^{7}/_{33}$ 47. $^{1}/_{5}$ 48. $^{3}/_{16}$ 49. $^{65}/_{100} = {}^{13}/_{20}$ 50. $^{20}/_{30} = {}^{2}/_{3}$
51. $^{120}/_{200} = {}^{3}/_{5}$ 52. $^{70}/_{146} = {}^{35}/_{73}$ 53. $^{8}/_{14} = {}^{4}/_{7}$ 54. $^{134}/_{152} = {}^{67}/_{76}$ 55. $^{24}/_{144} = {}^{1}/_{6}$ 56. $^{14}/_{20} = {}^{7}/_{10}$
57. $^{122}/_{156} = {}^{61}/_{78}$ 58. $^{28}/_{32} = {}^{7}/_{8}$ 59. $^{220}/_{540} = {}^{11}/_{27}$ 60. $^{4}/_{100} = {}^{1}/_{25}$ 61. $^{44}/_{50} = {}^{22}/_{25}$ 62. $^{23}/_{80}$
63. $^{84}/_{124} = {}^{21}/_{31}$ 64. $^{18}/_{120} = {}^{3}/_{20}$

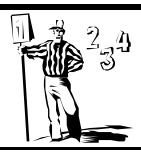
Task 31

1. $3\,{}^{4}/_{5}$ 2. $6\,{}^{3}/_{4}$ 3. $6\,{}^{3}/_{5}$ 4. $9\,{}^{1}/_{2}$ 5. $9\,{}^{6}/_{7}$ 6. $8\,{}^{7}/_{8}$ 7. $10\,{}^{2}/_{9}$ 8. $4\,{}^{5}/_{6}$ 9. $8\,{}^{2}/_{3}$ 10. $14\,{}^{5}/_{7}$
11. $7\,{}^{4}/_{11}$ 12. $12\,{}^{3}/_{10}$ 13. $^{23}/_{5}$ 14. $^{17}/_{2}$ 15. $^{31}/_{4}$ 16. $^{29}/_{3}$ 17. $^{59}/_{6}$ 18. $^{42}/_{5}$ 19. $^{43}/_{6}$ 20. $^{49}/_{5}$ 21. $^{93}/_{8}$
22. $^{94}/_{9}$ 23. $^{115}/_{9}$ 24. $^{65}/_{12}$

Task 32

1. $1\,{}^{1}/_{2}$ 2. 1 3. 1 4. $1\,{}^{6}/_{11}$ 5. $1\,{}^{2}/_{7}$ 6. $^{3}/_{5}$ 7. $^{1}/_{2}$ 8. $^{1}/_{3}$ 9. $^{5}/_{12}$ 10. $^{4}/_{11}$ 11. $1\,{}^{5}/_{12}$ 12. $^{13}/_{15}$
13. $1\,{}^{7}/_{20}$ 14. $1\,{}^{5}/_{12}$ 15. $8\,{}^{4}/_{15}$ 16. $^{2}/_{5}$ 17. $^{9}/_{40}$ 18. $^{9}/_{56}$ 19. $1\,{}^{3}/_{5}$ 20. $3\,{}^{8}/_{15}$ 21. $^{5}/_{8}$ 22. $1\,{}^{1}/_{8}$ pizzas
23. $^{9}/_{20}$ 24. $2\,{}^{1}/_{2}$ minutes 25. $7\,{}^{11}/_{15}$ metres

Table of Contents for the Homework / Assessment Worksheet Masters for Number, Level 5



Revision

Number

L5MN

1

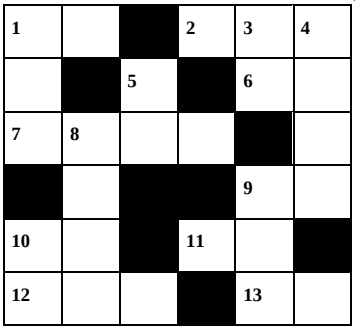
Homework / Assessment Worksheet

Term: **Week:** **To be completed by:**

A: 10 Quick Questions

1. 963 + 857 = ...
2. How many days in $6\frac{1}{2}$ weeks? .....
3. 3000 - 1285 = ...
4. How many months in five years? .....
5. 578 × 9 = ...
6. How many seconds in 9 minutes? .....
7. $6.89 × 7 = ...
8. 169 ÷ 13 = ...
9. How many weeks in 4 years? .....
10. 306 ÷ 9 = ...

B: Number Cross



Across

1. 456 ÷ 8 **2.** 276 + 485
6. 774 ÷ 9 **7.** 7837 - 4853
9. 13 × 7 **10.** 651 ÷ 7
11. 551 - 467 **12.** 199 × 5
13. 411 + 293 – 637

Down

1. 1141 - 589 **3.** 4 × 17 **4.** 678 + 963
5. 588 ÷ 6 **8.** 1071 × 9 **9.** 1344 - 398
10. 495 ÷ 5

C: Find the missing numbers

Replace each shape with a number.

1. 378 + ♥ = 738 ♥ = ...
2. 413 - ♣ = 87 ♣ = ...
3. 53 × ♠ = 477 ♠ = ...
4. 350 ÷ ♦ = 14 ♦ = ...
5. ♥ + 346 = 915 ♥ = ...
6. ♣ - 397 = 154 ♣ = ...
7. ♦ × 63 = 504 ♦ = ...
8. ♠ ÷ 13 = 54 ♠ = ...
9. 214 - ♣ = 68 ♣ = ...
10. 124 + ♥ = 361 ♥ = ...
11. 49 × ♠ = 343 ♠ = ...
12. 322 ÷ ♦ = 14 ♦ = ...
13. ♥ + 187 = 643 ♥ = ...
14. ♣ - 568 = 719 ♣ = ...
15. ♦ × 59 = 649 ♦ = ...
16. ♠ ÷ 18 = 25 ♠ = ...

E: Magic Square

Find the missing numbers in this magic square.

		16
		11
10		12

D: Word Problems

1. Rangi went to the shop and bought 43 apples, 18 oranges and 29 kiwi fruit. How many pieces of fruit did he buy? .....
2. Rebecca and Steven have been collecting telephone cards, and together they have 257. If Steven has 184, how many does Rebecca have? .....
3. Alisi bought 14 boxes of matches. If each box contains 49 matches, how many matches does he have altogether? .....
4. Mrs Jones has $128 to share between her 4 grandchildren. How much would each grandchild receive? .....
5. Items in a garge sale sell for $21, $7, $18, $9 and $13. If Sam and Alex are to share this money equally, how much does each person get? .....

This table shows the number and colour of jelly beans in four boxes which Kiri bought.

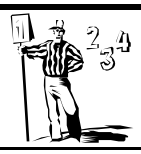
	Box A	Box B	Box C	Box D
Red	27	26	32	29
Blue	17	29	26	27
Green	25	19	17	24
White	24	19	23	18

6. How many white jelly beans in box D? .....
7. How many red jelly beans in box A? .....
8. How many blue jelly beans in all boxes? .....
9. Which box had the most white jelly beans? .....
10. How many jelly beans in box C? .....
11. Which box had the least green jelly beans? .....
12. How many jelly beans altogether? .....

Comments:

Please sign:
Parent / Caregiver

AWS



Revision

Number

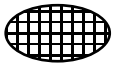
Homework / Assessment Worksheet

L5MN

2

Term: **Week:** **To be completed by:**

A: 10 Quick Questions

1. 415 × 23 = ...
2. 1780 ÷ 5 = ...
3. Find the missing number ♠
   108 ÷ ♠ = 9 .....
4. $6.32 × 7 = ...
5. How many sides does a square have? .....
6. Name this shape
   
   .....
7. 34344 ÷ 6 = ...
8. 156 + 278 = ...
9. Find the missing number ♥
   ♥ + 862 = 1273 .....
10. How many centimetres in 2.5m? .....

B: Numbers Facts

1. Write down the even numbers between 50 and 63
   .....
2. Write down the odd numbers between 68 and 77
   .....
3. Write down the first 4 multiples of 11 .....
4. Write down the multiples of 7 between 40 and 58
   .....
5. How many multiples of 6 are less than 37?
   .....
6. Write down the prime numbers less than 20
   .....
7. Write down the prime numbers between 15 and 35.
   .....
8. What are the factors of 12? .....
9. What are the factors of 28? .....
10. What are the factors of 36? .....

D: Word Problems

1. Angela walks to and from school each day, a total of 5km. How far does she walk in two school weeks? .....
2. Frank bought a piece of wood 360cm long. He cuts 8 pieces, each 40cm long from this piece of wood. How much is left after he has cut the 8 pieces off? .....

This table shows the price of tickets sold, and the number of each type sold.

Price of ticket	$15	$20	$25
Total sold	45	30	25

3. How many $15 tickets were sold? .....
4. How many tickets were sold altogether? .....
5. What would it cost to buy 9 tickets at $15 each? .....
6. What would it cost to buy 13 tickets at $20 each? .....
7. What would it cost to buy 8 tickets at $25 each? .....
8. If Steven buys four $15 tickets and six $20 tickets, how much would this cost him? .....
9. If Graham buys seven $15 tickets and five $20 tickets, how much would this cost him? .....
10. If Janine has $95 how many $15 tickets can she buy? .....
11. If Ken has $165 how many $25 tickets can he buy? .....
12. If Andrew has $110 and buys 4 $25 tickets, how much change does he have left after buying the tickets? .....
13. If Jackie has $160 and buys 9 $15 tickets, how much change does he have left after buying the tickets? .....

C: Order of Operations

1. 17 + 9 - 12 = ...
2. 21 - 7 + 10 = ...
3. 36 ÷ 9 + 15 = ...
4. 9 × 7 + 6 = ...
5. 23 + 4 × 6 = ...
6. 60 × 4 - 47 = ...
7. 80 - 9 × 8 = ...
8. 39 + 6 × 9 = ...
9. 39 - 36 ÷ 3 = ...
10. 42 ÷ 7 + 13 = ...
11. (18 + 27) × 3 = ...
12. 5(49 - 19) = ...
13. 7(49 - 28) = ...
14. 6(34 + 46) = ...
15. 8(63 + 27) = ...
16. 11 + 3(7 + 13) = ...
17. 51 - 4(37 - 29) = ...
18. 4(6 + 4 × 3) = ...
19. 6(24 ÷ 3 + 7) = ...
20. 8 + 2(21 + 9) = ...
21. 5(9 + 4 × 5) = ...
22. 19 - 2(18 - 11) = ...
23. 9 + 3(24 – 5 × 3) = ...
24. 29 - 5(7 × 2 - 9) =.....
25. 7(4 + 6 × 4) - 40 = ...
26. 9(3 × 9 – 18) - 17 = ...

Comments:

Please sign:
Parent / Caregiver

AWS

N1 / N2 / N3

Number

Homework / Assessment Worksheet

L5MN

3

Term: **Week:** **To be completed by:**

A: 10 Quick Questions

1. 29 - 6 × 3 = ...
2. 64 ÷ 8 + 19 = ...
3. Find the missing number
   ♥ × 11 = 110 ♥ = ...
4. How many sides does a parallelogram have? .....
5. What would 5 items at $3.95 each cost? .....
6. How many metres in 8.5 kilometres? .....
7. Name this shape  .....
8. How many minutes in $3\frac{1}{2}$ hours? .....
9. List the first 4 multiples of 13 .....
10. List the factors of 14 .....

B: Squares/Square Roots

Find ...

1. 8^2 ..... 8. $\sqrt{36}$ .....
2. 13^2 ..... 9. $\sqrt{49}$ .....
3. 15^2 ..... 10. $\sqrt{144}$ .....
4. 22^2 ..... 11. $\sqrt{196}$ .....
5. 60^2 ..... 12. $\sqrt{400}$ .....
6. 90^2 ..... 13. $\sqrt{625}$ .....
7. 100^2 ..... 14. $\sqrt{900}$ .....

H: Magic Squares

Find the missing numbers in these magic squares.

		19
		17
11		9

15		
	13	14
		9

C: Scientific Notation

Rewrite in standard form.

1. 9600 .....
2. 37000 .....
3. 314 .....
4. 0.0007 .....
5. 0.057 .....

Rewrite as ordinary numbers.

6. 4.8×10^4 .....
7. 1.38×10^8 .....
8. 6.36×10^{-3} .....
9. 4.2×10^{-5} .....

D: Have a Guess?

Approximations

1. What is the population of New Zealand? .....
3. What is the length of your classroom? .....
5. How long would it take you to run 100m? .....
7. How many metres in a mile? .....

Estimations

2. How high is the average doorway? .....
4. How many students at your school? .....
6. How many stars in the sky? .....
8. How many yards in a furlong? .....

E: Rounding Off Numbers

Round off to the nearest 10.

1. 29 .....
2. 51 .....
3. 118 .....
4. 408 .....
5. 85 .....
6. 138 .....
7. 3542 .....

Round off to the nearest 100.

8. 192 .....
9. 316 .....
10. 868 .....
11. 477 .....
12. 1048 .....
13. 3632 .....
14. 6429 .....
15. 6068 .....

F: Decimal Places

Round off to 1 decimal place.

1. 16.34 .....
2. 17.86 .....
3. 31.72 .....
4. 192.33 .....
5 425.48 .....
6. 193.03 .....
7. 936.35 .....
8. 419.95 .....

Round off to 2 decimal places.

9. 2.639 .....
10. 9.124 .....
11. 17.909 .....
12. 183.876 .....
13. 163.124 .....
14. 427.348 .....
15. 500.076 .....
16. 637.998 .....

G: Significant Figures

Round off to 1 significant figure.

1. 37 .....
2. 71 .....
3. 39 .....
4. 130 .....
5. 56.7 .....
6. 73.2 .....
7. 637.3 .....

Round off to 2 significant figures.

8. 538 .....
9. 476 .....
10. 16.95 .....
11. 375.96 .....
12. 5360 .....
13. 1875 .....
14. 6372 .....
15. 13299 .....

Comments:

Please sign:
Parent / Caregiver

AWS

N5

Number

Homework / Assessment Worksheet

L5MN

4

Term: **Week:** **To be completed by:**

A: 10 Quick Questions

1. 39 + 4 × 8 = ...
2. $3.46 × 13 = ...
3. How many days in 16 weeks? .....
4. How many metres in 4.5kms? .....
5. Write 3.2×10^5 as an ordinary number .....
6. Name this shape  .....
7. Find the missing number ♣ 15 + ♣ - 47 = 36 .....
8. List the factors of 32 .....
9. Round 72 to the nearest ten .....
10. Round off 8.35 to one decimal place .....

B: Finding Percentages

Calculate

1. 10% of $70 .....
2. 25% of 160kg .....
3. 75% of $48 .....
4. 50% of $4.50 .....
5. 20% of 320cm .....
6. 60% of 70kg .....
7. $33\frac{1}{3}$% of $45 .....
8. 45% of $600 .....
9. 15% of 60m .....
10. 120% of $80 .....

C: Decimals / Fractions / Percentages

Complete the table by **converting** between commonly used decimals, fractions and percentages.

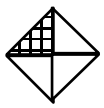
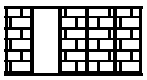
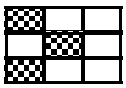
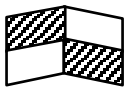
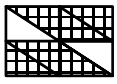
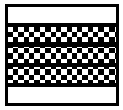
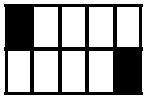
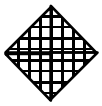
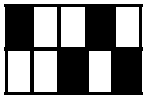
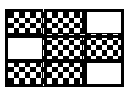
Decimals→	←Fractions→	←Percentages
1.	2.	10%
0.25	3	4.
5.	$\frac{1}{3}$	6.
7.	8.	50%
9.	$\frac{2}{3}$	10.
0.75	11.	12.

D: Word Problems

1. If 48% of a club were girls, what percentage were boys? .....
2. Amanda is in a class of 28 pupils. If 50% were boys, how many were girls? .....
3. 10% of a garden of $160m^2$ was planted in roses. What was the area planted in roses? .....
4. A body contains 70% water. If Jeremy weighs 60kg, how much of his weight is water? .....
5. A class survey on pets, showed that 80% were cats. If there were 50 pets, how many were cats? .....
6. Rangi counted 180 cars going past the school gate. If 60% were going too fast, how many cars was this? .....
7. In a class of 28, 25% wanted to take netball as a sport. How many students was this? .....
8. Linwood High School played 20 soccer games during the season, losing only 15%. How many games did they lose? .....
9. In a school of 670 students, 10% were absent on Monday. How many were absent? .....
10. Calculate 30% of $26.75, round off to nearest cent. .....

E: Percentages

Find the percentage shaded in each diagram.

1.  .....
2.  .....
3.  .....
4.  .....
5.  .....
6.  .....
7.  .....
8.  .....
9.  .....
10.  .....

Comments:

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AWS

N4 / N5

Number

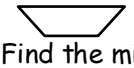
L5MN

5

Homework / Assessment Worksheet

Term: **Week:** **To be completed by:**

A: 10 Quick Questions

1. 42 - 9 × 4 = ...
2. What would 7 items at $9.30 each cost? .....
3. How many minutes in 16 hours? .....
4. How many metres in 3.75kms? .....
5. Find 10% of $84 .....
6. Name this shape  .....
7. Find the missing number ♣
   42 + ♣ - 69 = 51 .....
8. List the factors of 40
   .....
9. Round off 8.34 to one decimal place .....
10. Find $\sqrt{81}$ .....

B: Estimations

Have a guess? **Without calculating** the exact answer.

		Estimate answer
1.	20.5 + 4.3 =	*eg 24*
2.	149.9 + 51.4 =	.....
3.	8.6 × 10.3 =	.....
4.	98 ÷ 5.2 =	.....
5.	$\frac{242}{83}$	.....
6.	6.3 × 18.5 =	.....
7.	24.2 - 11.9 =	.....
8.	797.5 - 347.2 =	.....
9.	9.3 + 2.9 × 5.1 =	.....
10.	3.1 × 5.9 + 11.9 =	.....
11.	897.5 - 637.2 =	.....
12.	7.9 × 9.8 =	.....
13.	26.8 ÷ 3.7 =	.....
14.	9.3 + 4.3 × 5.1 =	.....
15.	6.23^2 =	.....
16.	9.87^2 =	.....
17.	11.89^2 =	.....
18.	20.43^2 =	.....
19.	$\sqrt{47.78}$ =	.....
20.	$\sqrt{64.128}$ =	.....
21.	$\sqrt{24.7} + 9.26^2$ =	.....

C: Decimals Operations

Calculate the following ...

1.	69.25 + 8.78	2.	3.605 + 4.371	3.	96.57 - 43.25	4.	9.250 - 4.127

5. 31.86 + 0.798 = ...
6. 354.89 + 65.235 = ...
7. 96.87 - 74.73 = ...
8. 200 - 96.313 = ...
9. 52 + 8.4 + 0.417 = ...
10. 28.7 - 9.15 + 6.3 = ...

11.	2.86 × 8	12.	5.94 × 0.4	13.	3.197 × 0.02	14.	60.4 × 1.2

15. 72.4 × 0.4 = ...
16. 4.27 × 0.03 = ...
17. 6.340 ÷ 0.5 = ...
18. 45.27 ÷ 0.9 = ...
19. 0.84 ÷ 1.2 = ...
20. 0.648 ÷ 0.04 = ...
21. 0.74 ÷ 0.002 = ...
22. 0.99 ÷ 0.11 = ...

D: How much will it Cost?


Computers $1750 each

A school is going to set up a computer in the school office so they can produce newsletters to send home. What will it cost if they buy ...


computer disks 10 for $16.50

1. 3 computers .....
2. 30 computer disks .....
3. 2000 envelopes .....
4. 5000 sheets of paper .....
5. What is the total cost of setting up the school office? .....
6. What does one computer disk cost? .....
7. What would 45 computer disks cost? .....
8. What would 120 computer disks cost? .....
9. What would it cost to buy 10000 sheets of paper? .....
10. What would it cost to buy 15000 sheets of paper? .....
11. The school is going to buy 25 computers to set up in a new classroom. What would this cost? .....
12. If a school has $14000 to spend on computers, how many computers could they buy and how much money would they have left over? ..... computers $.....


Paper $4.95 for 500 sheets

13. If the newsletters are to be posted home each week, at a cost of 40 cents each, how much would this cost each week, if there are 562 pupils at this school? .....


Envelopes 7 cents each

Comments:

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Parent / Caregiver

AWS

N6

Number

Homework / Assessment Worksheet

L5MN

6

Term: **Week:** **To be completed by:**

A: 10 Quick Questions

1. (7 + 33) × 7 = ...
2. What would 9 books at $7.65 each cost? .....
3. How many days in 9.5 weeks? .....
4. How many metres in 8.7km? .....
5. Find 20% of 160kg .....
6. Name this shape  .....
7. Find the missing number♣
   35 × ♣ = 175 .....
8. 5.62 + 0.087 = ...
9. 5.32 × 0.06 = ...
10. Calculate 13^2 = ...

B: What is the new Temperature?

Calculate the new temperature.

1. 16°c, then drops 7°c .....
2. 9°c,then drops 11°c .....
3. 8°c, then rises 5°c .....
4. –8°c, then rises 9°c .....
5. –4°c, then drops 8°c .....
6. –6°c, then drops 7°c .....
7. 0°c, then rises 12°c .....
8. 0°c, then drops 11°c .....
9. –6°c, then drops 5°c .....
10. 4°c, then drops 11°c .....

C: Am I Sick or Well?

In our bodies there are good bugs ☺, and there are bad bugs ☹. One good bug eats one bad bug.

1. If ☺☺☺ means ⁺3 what does ☹☹☹☹ mean? .....

Study these bugs.

☺☺☹☹☹☹☺
☺☹☺☺☹☺☹
☺☹☺☹☺☺☺
☺☺☹☹☺☹☹

2. How many ☺ bugs? .....
3. How many ☹ bugs? .....
4. Am I sick or well? .....

Use + , - ,and = signs when answering the following;

5. Write a maths sentence to show how you could get your answer for question 4 above. (eg. ⁺6 + ⁻7 = ⁻1)
   .....

D: Integers

Add and **Subtract** the following

1. 5 + 9 = ...
2. ⁻5 + 11 = ...
3. 11 + ⁻6 = ...
4. ⁻8 + 9 = ...
5. 12 + ⁻14 = ...
6. 0 + 10 = ...
7. 0 + ⁻14 = ...
8. 6 + ⁻6 = ...
9. ⁻7 + 12 = ...
10. 7 + ⁻13 = ...
11. ⁻6 + 11 = ...
12. ⁻4 + ⁻6 = ...
13. ⁻8 - 6 = ...
14. ⁻15 - 8 = ...
15. 8 - ⁻11 = ...
16. 8 - ⁻9 = ...
17. 7 - ⁻8 = ...
18. ⁻9 - ⁻9 = ...
19. ⁻10 - ⁻7 = ...
20. ⁻12 - ⁻9 = ...
21. ⁻15 - ⁻7 = ...
22. ⁻5 - ⁻9 = ...
23. ⁻9 - ⁻15 = ...
24. ⁻9 - ⁻5 = ...
25. 0 - ⁻7 = ...
26. ⁻9 - ⁻5 = ...

E: Problem Solving

Use the numbers 1, 2, 3, 4, 5, 6, 7, 8, and 9, to make a 3 by 3

Magic Square.

Each number is to be used only once.

F: Multiplication & Division Squares

Complete these **Multiplication** and **Division** squares.
(In 3. **⁺12 ÷ ⁺2 = ⁺6** has been done for you , and entered)

1.

×	⁺3	⁺7	⁻2
⁺4			
⁻3			
⁺5			

2.

×	⁻4	⁻9	⁺8
⁺7			
⁻5			
⁻6			

3.

÷	⁻2	⁺3	⁻4
⁺12	⁺6		
⁻18			
⁺24			

4.

÷	⁺4	⁻6	⁺12
⁻12			
⁺36			
⁻60			

Comments:

Please sign:
Parent / Caregiver

AWS

N7 / N8

Number

Homework / Assessment Worksheet

L5MN

7

Term: **Week:** **To be completed by:**

A: 10 Quick Questions

1. 1.64 × 1.2 = ...
2. 38.46 ÷ 0.2 = ...
3. How many metres in 565 centimetres? .....
4. $11^2 + \sqrt{16}$ = ...
5. Write 83000 in standard form .....
6. Name this shape  .....
7. Find the next 2 numbers in the pattern 2, 5, 10, 17, ...
8. What type of triangle is this?  .....
9. How many sides does a decagon have? .....
10. How many minutes in 6.25 hours? .....

B: Writing Percentages?

Write the following as percentages. %

1. 30 out of 60 .....
2. 20 out of 80 .....
3. 5 out of 15 .....
4. 6 out of 18 .....
5. 14 out of 21 .....
6. 30 out of 50 .....
7. 40 out of 50 .....
8. 10 out of 50 .....
9. 8 out of 200 .....
10. 30 out of 40 .....
11. 48 out of 60 .....
12. 30 out of 30 .....

C: What Percentage is it?

Calculate the following.

1. Cheryl got 38 out of 50 in a recent maths test. What percentage did she get?.....
2. James spent 8 hours asleep last night. What percentage is that of the whole day? .....
3. The school netball team won 18 games out of 20. What percentage did they lose? .....
4. What percentage of people watched a rugby test on T.V. if 4 out of 5 watched it on television? .....
5. Out of 50 pupils at school, 23 walk to school. What percentage is this? .....

D: Using Percentages

Calculate the following.

1. Ranui bought birthday presents that were going to cost him $75.00, but was given a 10% discount for cash. What did he pay for his presents? .....

2. A house in the street sold for $205000. They had hoped to get 10% more for the house. What would it have sold for then? .....
3. A popular take-away bar recently increased its prices by 5%. If a meal had cost $7.00, what would the new price be? .....

4. A company offered a group discount of 20%. If the normal price for swimming with the dolphins was $55.00, what would be the discounted price? .....
5. In a book sale, all $18.00 and $21.00 books have been reduced in price by 40%. What are the sale prices for these books? .....

6. GST is 12.5%. What would the price be when GST is added to the cost of a new car worth $21,000? .....

E: How do you spend your day?

Fill out the table of what you do during any school day. Round off the times to the nearest half hour.

Calculate the percentage time you spend on each activity as listed. (Does not have to add up to 24 hrs)

	Sleeping	Eating	School	TV	Sport
Hours spent					
%					

Comments:

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AWS

N9

Number

Homework / Assessment Worksheet

L5MN

8

Term: **Week:** **To be completed by:**

A: 10 Quick Questions

1. Find 25% of $60 = ...
2. 0.36 × 1.2 = ...
3. How many minutes in 6.5 hours? .....
4. How many kilometres in 5200 metres? .....
5. Write 0.6 as a percentage .....
6. How many sides does a pentagon have? .....
7. Find the next number 2, 7, 12, 17, ...
8. List the first 4 multiples of 14 .....
9. Round off 0.594 to two decimal places .....
10. Calculate 2.5^2 .....

B: Writing Ratios

Write the following as ratios (do not simplify)

1. There were 12 cats to every 15 dogs. .....
2. There was 1 teacher to every 23 pupils. .....
3. There were 17 patients to every nurse. .....

This table shows two Year 9 classes at a school.

Class 9St		Class 9Wt	
Boys	Girls	Boys	Girls
17	14	15	16

4. What is the ratio of boys to girls in class 3St? .....
5. What is the ratio of girls to boys in class 3Wt? .....

C: Simplifying Ratios

Simplify these ratios by finding the missing numbers.

1. 10 : 18 5 : .....
2. 21 : 36 7 : .....
3. 32 : 24 4 : .....
4. 21 : 56 3 : .....
5. 25 : 125 1 : .....
6. 36 : 45 4 : .....
7. 56 : 8 7 : .....
8. 12 : 20 3 : .....
9. 20 : 75 4 : .....
10. 88 : 22 8 : .....

Simplify these ratios.

11. 30 : 50 ..... : .....
12. 24 : 9 ..... : .....
13. 28 : 40 ..... : .....
14. 66 : 110 ..... : .....
15. 90 : 50 ..... : .....
16. 48 : 20 ..... : .....
17. 42 : 14 ..... : .....
18. 60 : 100 ..... : .....
19. 6 : 14 : 20 ..... : ..... : .....
20. 6 : 15 : 24 ..... : ..... : .....
21. 10 : 4 : 16 ..... : ..... : .....
22. 20 : 12 : 4 ..... : ..... : .....

D: Sharing in a given Ratio

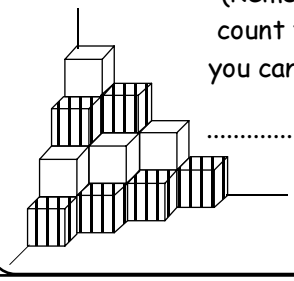
1. Share $24 in a ratio of 1 : 2 .....
2. Share $54 in a ratio of 1 : 5 .....
3. Share 63 grams in a ratio of 4 : 5 .....
4. Share 400mls in a ratio of 5 : 3 .....
5. Share $72 in a ratio of 3 : 5 : 1 .....
6. Share $80 in a ratio of 2 : 3 : 5 .....

F: Puzzle

This pile of 20 cubes is in the corner of a room. There are 2 grey layers and 2 clear layers of cubes. What is the ratio of clear to grey cubes ?

(Remember to count the ones you cannot see).

.....



E: Word Problems

1. The ratio of teachers to pupils on a school trip should be 1 to 8. If there are 24 pupils going on the trip, how many teachers should go? .....
2. Jenny and Steven decided to share 64 lollies between themselves in a ratio of their ages. If Jenny is 9 and Steven is 7, how many lollies does each child get? .....

3. 120 tickets were sold for a concert. If the ratio of tickets sold to children and to adults was 9 to 1, how many children are going to the concert? .....

4. In a class of 28, Miri was voted most popular by a 4 : 3 majority. How many votes did she get? .....

5. Jan has $180. She buys some clothes, some books and some food in a ratio of 5 : 2 : 3. How much did she spend on each item?
clothes ..... : books ..... : food .....

Comments:

Please sign:
Parent / Caregiver

AWS

N9

Number

L5MN

9

Homework / Assessment Worksheet

Term: **Week:** **To be completed by:**

A: 10 Quick Questions

1. 1.9 + 18 + 0.096 = ...
2. 24.9 ÷ 0.3 = ...
3. How many weeks in 59.5 days? .....
4. How many millimetres in 82 centimetres? .....
5. 7 + 2(29 - 3 × 8) = ...
6. How many years in two decades? .....
7. Find 20% of $43.50 .....
8. What would 7 items at $7.65 each cost? .....
9. How many minutes between 1:45 p.m. and 4:25 p.m., on the same day? .....
10. Calculate 0.9^2 .....

B: Equivalent Fractions

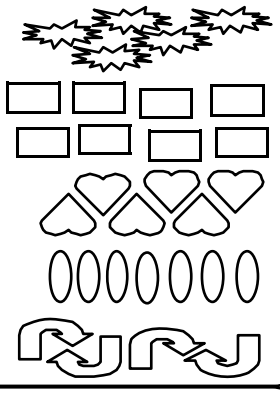
Find the missing numbers to complete these equivalent fractions.

1. $^1/_2 = ♣/_{12}$ ♣ = ...
2. $^2/_3 = ♥/_{18}$ ♥ = ...
3. $^3/_4 = ♦/_{60}$ ♦ = ...
4. $^3/_{11} = ♠/_{44}$ ♠ = ...
5. $^3/_7 = ♣/_{35}$ ♣ = ...
6. $^3/_5 = ♥/_{50}$ ♥ = ...
7. $^4/_5 = ♣/_{60}$ ♣ = ...
8. $^3/_8 = ♠/_{48}$ ♠ = ...
9. $^6/_7 = ♦/_{42}$ ♦ = ...
10. $^5/_9 = ♠/_{72}$ ♠ = ...

C: Shade the Diagrams

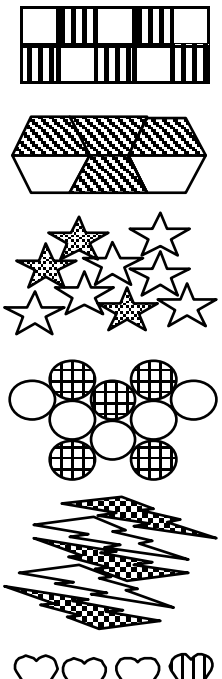
Shade in the fraction given for each diagram.

1. $^2/_5$
2. $^3/_4$
3. $^2/_3$
4. $^4/_7$
5. $^4/_4$



D: Writing Fractions

What fraction in each design is shaded?



1. .....
2. .....
3. .....
4. .....
5. .....
6. .....

E: Simplifying Fractions

Find the simplest equivalent fraction for these fractions.

1. $^{10}/_{15}$ .....
2. $^{12}/_{22}$ .....
3. $^{14}/_{20}$ .....
4. $^{100}/_{400}$ .....
5. $^{40}/_{90}$ .....
6. $^{55}/_{77}$ .....
7. $^{15}/_{90}$ .....
8. $^{18}/_{72}$ .....
9. $^{16}/_{24}$ .....
10. $^{18}/_{45}$ .....
11. $^{21}/_{63}$ .....
12. $^{20}/_{45}$ .....
13. $^{48}/_{60}$ .....

F: Converting Fractions

Convert these improper fractions to mixed numbers.

1. $^{17}/_5$ = ...
2. $^{19}/_4$ = ...
3. $^{28}/_5$ = ...
4. $^{61}/_6$ = ...
5. $^{75}/_7$ = ...
6. $^{53}/_8$ = ...
7. $^{86}/_9$ = ...
8. $^{67}/_{12}$ = ...

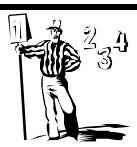
Change to improper fractions.

9. $5\,^3/_5$ = ...
10. $7\,^1/_2$ = ...
11. $6\,^5/_7$ = ...
12. $8\,^2/_3$ = ...
13. $7\,^1/_6$ = ...
14. $9\,^3/_5$ = ...
15. $7\,^5/_8$ = ...
16. $6\,^5/_{12}$ = ...

Comments:

Please sign:
Parent / Caregiver

AWS



N9

Number

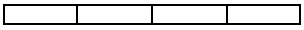
Homework / Assessment Worksheet

L5MN

10

Term: **Week:** **To be completed by:**

A: 10 Quick Questions

1. 7.2 - 4.7 + 0.092 = ...
2. 43.2 × 0.8 = ...
3. Shade $^3/_4$ of this design

4. How many millilitres in 6.7 litres? .....
5. Write 75 in Roman Numerals .....
6. 7 + ⁻16 = ...
7. Find 75% of $48 .....
8. Divide $35 in a ratio of 5 : 2 .....
9. How many minutes between 7:35 am and 2:15 pm, on the same day? .....
10. How many sides does a nonagon have? .....

B: Adding and Subtracting Fractions

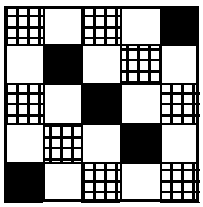
Add or subtract these fractions, simplifying if possible.

1. $^1/_4 + ^3/_4$ = ...
2. $^2/_3 + ^2/_3$ = ...
3. $^2/_4 + ^3/_4$ = ...
4. $^7/_{11} + ^8/_{11}$ = ...
5. $^6/_7 + ^5/_7$ = ...
6. $^3/_5 - ^1/_5$ = ...
7. $^5/_8 - ^3/_8$ = ...
8. $^7/_9 - ^4/_9$ = ...
9. $^5/_6 - ^1/_6$ = ...
10. $^7/_{11} - ^5/_{11}$ = ...
11. $^1/_4 + ^2/_3$ = ...
12. $^1/_3 + ^3/_4$ = ...
13. $^3/_4 + ^4/_5$ = ...
14. $^4/_5 + ^2/_3$ = ...
15. $5^4/_5 + 2^1/_4$ = ...
16. $^3/_5 - ^1/_3$ = ...
17. $^5/_6 - ^2/_7$ = ...
18. $^5/_8 - ^2/_5$ = ...
19. $7^2/_5 - 4^4/_5$ = ...
20. $8^1/_4 - 4^2/_3$ = ...

C: What Fraction?

What fraction of each coloured square is in this grid?

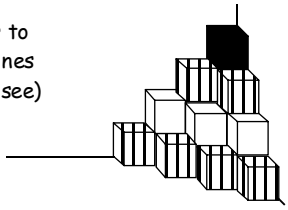
1.  .....
2. .....
3. .....



A pile of 20 cubes is stacked in the corner of a room. There are 2 grey layers, 1 clear layer and 1 black layer of cubes.

4. What fraction of the pile is ? .....
5. What fraction of the pile is ? .....
6. What fraction of the pile is ? .....

(Remember to count the ones you cannot see)



D: Word Problems

Give answers as **fractions** in their **simplest form**.

1. Amelia and Joseph share an apple. If Amelia eats $^4/_7$ how much does Joseph eat? .....

2. At a party for 20 school friends, 12 were girls and the rest were boys. What fraction were boys? .....
3. During the May holidays Mr. Chapman painted $^3/_7$ of his house. In the August holidays he painted another $^2/_7$ of the house. How much of the house has been painted so far? .....

4. The 'All Blacks' won 14 out of their last 20 games. What fraction of the games did they win? .....
5. In Year 10, 40 out of 200 students will receive a certificate for great results in their exams. What fraction of the year group is this? .....

6. Paul cuts two lengths of plastic pipe. If one length is $4\frac{1}{2}$ metres and the other is $5\frac{3}{4}$ metres, what is the total length of pipe he cut? .....
7. Mrs Jones has $6\frac{1}{2}$ metres of material. If she makes a dress using $3\frac{3}{4}$ metres, what length of material does she have left? .....

8. Three TV ads ran for $\frac{2}{3}$ of a minute, $\frac{3}{4}$ of a minute and $\frac{1}{2}$ a minute. Write the total ad time as a mixed number, then convert your answer to seconds. .... seconds

Comments:

Please sign:
Parent / Caregiver

AWS

Homework / Assessment Worksheet
Answers

Worksheet 1

A:

1. 1820 2. 45.5 days 3. 1715 4. 60 months 5. 5202 6. 540 seconds 7. $48.23 8. 13 9. 208 weeks 10. 34

B:

5	7	■	7	6	1
5	■	9	■	8	6
2	9	8	4	■	4
■	6	■	■	9	1
9	3	■	8	4	■
9	9	5	■	6	7

C:

1. 360 2. 326 3. 9 4. 25 5. 569 6. 551 7. 8 8. 702 9. 146 10. 237 11. 7 12. 23 13. 456 14. 1287 15. 11 16. 450

D:

1. 90 pieces of fruit 2. 73 cards 3. 686 matches 4. $32 5. $34 6. 18 white jelly beans 7. 27 red jelly beans 8. 99 blue jelly beans 9. Box A 10. 98 jelly beans 11. Box C 12. 382 jelly beans

Worksheet 2

A:

1. 9545 2. 356 3. 12 4. $44.24 5. 4 sides 6. ellipse or oval 7. 5724 8. 434 9. 411 10. 250cm

B:

1. 52, 54, 56, 58, 60, 62 2. 69, 71, 73, 75 3. 11, 22, 33, 44 4. 42, 49, 56 5. 6 multiples 6. 2, 3, 5, 7, 11, 13, 17, 19 7. 17, 19, 23, 29, 31 8. 1, 2, 3, 4, 6, 12 9. 1, 2, 4, 7, 14, 28 10. 1, 2, 3, 4, 6, 9, 12, 18, 36

C:

1. 14 2. 24 3. 19 4. 69 5. 47 6. 193 7. 8 8. 93 9. 27 10. 19 11. 135 12. 150 13. 147 14. 480 15. 720 16. 71 17. 19 18. 72 19. 90 20. 68 21. 145 22. 5 23. 36 24. 4 25. 156 26. 64

D:

1. 50km 2. 40cm 3. 45 tickets 4. 100 tickets 5. $135 6. $260 7. $200 8. $180 9. $205 10. 6 tickets 11. 6 tickets 12. $10 change 13. $25 change

Worksheet 3

A:

1. 11 2. 27 3. 10 4. 4 sides 5. $19.75 6. 8500m 7. hexagon 8. 210 minutes 9. 13, 26, 39, 52 10. 1, 2, 7, 14

B:

1. 64 2. 169 3. 225 4. 484 5. 3600 6. 8100 7. 10000 8. 6 9. 7 10. 12 11. 14 12. 20 13. 25 14. 30

C:

1. 9.6×10^3 2. 3.7×10^4 3. 3.14×10^2 4. 7×10^{-4} 5. 5.7×10^{-2} 6. 48000 7. 138000000 8. 0.00636 9. 0.000042

D:

no answer supplied

E:

1. 30 2. 50 3. 120 4. 410 5. 90 6. 140 7. 3540 8. 200 9. 300 10. 900 11. 500 12. 1000 13. 3600 14. 6400 15. 6100

F:

1. 16.3 2. 17.9 3. 31.7 4. 192.3 5. 425.5 6. 193.0 7. 936.4 8. 420.0 9. 2.64 10. 9.12 11. 17.91 12. 183.88 13. 163.12 14. 427.35 15. 500.08 16. 638.00

G:

1. 40 2. 70 3. 40 4. 100 5. 60 6. 70 7. 600 8. 540 9. 480 10. 17 11. 380 12. 5400 13. 1900 14. 6400 15. 13000

Worksheet 4

A:

1. 71 2. $44.98 3. 112 days 4. 4500m 5. 320000 6. pentagon 7. 68 8. 1, 2, 4, 8, 16, 32 9. 70 10. 8.4

B:

1. $7.00 2. 40kg 3. $36 4. $2.25 5. 64cm 6. 42kg 7. $15.00 8. $270 9. 9m 10. $96

C:

1. .1 2. $\frac{1}{10}$ 3. $\frac{1}{4}$ 4. 25% 5. $0.3\dot{}$ 6. $33\frac{1}{3}\%$ 7. .5 8. $\frac{1}{2}$ 9. $.6\dot{}$ 10. $66\frac{2}{3}\%$ 11. $\frac{3}{4}$ 12. 75%

D:

1. 52% 2. 14 girls 3. $16m^2$ 4. 42kg 5. 40 cats 6. 108 cars 7. 7 pupils 8. 3 games 9. 67 pupils 10. $8.03

E:

1. 25% 2. 80% 3. $33\frac{1}{3}\%$ 4. 50% 5. 75% 6. 60% 7. 20% 8. 100% 9. 40% 10. $66\frac{2}{3}\%$

Worksheet 5

A:

1. 6 2. $65.10 3. 960mm 4. 3750m 5. $8.40 6. (isosceles) trapezium 7. 78 8. 1, 2, 4, 5, 8, 10, 20, 40 9. 8.3 10. 9

B:

1. 24 2. 200 3. 90 4. 20 5. 30 6. 120 7. 12 8. 500 9. 24 10. 30 11. 300 12. 80 13. 9 14. 29 15. 36 16. 100 17. 144 18. 400 19. 7 20. 8 21. 86

C:

1. 78.03 2. 7.976 3. 53.32 4. 5.123 5. 32.658 6. 420.125 7. 22.14 8. 103.687 9. 60.817 10. 25.85 11. 22.88 12. 2.376 13. 0.06394 14. 72.48 15. 28.96 16. 0.1281 17. 12.68 18. 50.3 19. 0.7 20. 16.2 21. 370 22. 9

D:

1. $5250 2. $49.50 3. $140 4. $49.50 5. $5489 6. $1.65 7. $74.25 8. $198 9. $99 10. $148.50 11. $43750 12. 8 computers, $0.00 13. $224.80

Worksheet 6

A:

1. 280 2. $68.85 3. 66.5 days 4. 8700m 5. 32kg 6. parallelogram 7. 5 8. 5.707 9. 0.3192 10. 169

B:

1. 9ºc 2. $^-$2ºc 3. 13ºc 4. 1ºc 5. $^-$12ºc 6. $^-$13ºc 7. 12ºc 8. $^-$11ºc 9. $^-$11ºc 10. $^-$7ºc

C:

1. $^-$4 2. $^+$15 3. $^-$13 4. Well 5. $^+15 + {}^-13 = {}^+2$

D:

1. 14 2. 6 3. 5 4. 1 5. $^-$2 6. 10 7. $^-$14 8. 0 9. 5 10. $^-$6 11. 5 12. $^-$10 13. $^-$14 14. $^-$23 15. 19 16. 17 17. 15 18. 0 19. $^-$3 20. $^-$3 21. $^-$8 22. 4 23. 6 24. $^-$4 25. 7 26. 3

E:

6	7	2
1	5	9
8	3	4

F:

1.

×	$^+$3	$^+$7	$^-$2
$^+$4	$^+$12	$^+$28	$^-$8
$^-$3	$^-$9	$^-$21	$^+$6
$^+$5	$^+$15	$^+$35	$^-$10

2.

×	$^-$4	$^-$9	$^+$8
$^+$7	$^-$28	$^-$63	$^+$56
$^-$5	$^+$20	$^+$45	$^-$40
$^-$6	$^+$24	$^+$54	$^-$48

3.

÷	$^-$2	$^+$3	$^-$4
$^+$12	$^-$6	$^+$4	$^-$3
$^-$18	$^+$9	$^-$6	$^+$4.5
$^+$24	$^-$12	$^+$8	$^-$6

4.

÷	$^+$4	$^-$6	$^+$12
$^-$12	$^-$3	$^+$2	$^-$1
$^+$36	$^+$9	$^-$6	$^+$3
$^-$60	$^-$15	$^+$10	$^-$5

Worksheet 7

A:

1. 1.968 2. 192.3 3. 5.65m 4. 125 5. 8.3×10^4 6. cube 7. 26, 37 8. Right angled, scalene
9. 10 sides 10. 375 minutes

B:

1. 50% 2. 25% 3. $33\frac{1}{3}$% 4. $33\frac{1}{3}$% 5. $66\frac{2}{3}$% 6. 60% 7. 80% 8. 20% 9. 4%
10. 75% 11. 80% 12. 100%

C:

1. 76% 2. $33\frac{1}{3}$% 3. 10% 4. 80% 5. 46%

D:

1. $67.50 2. $225,500 3. $7.35 4. $44.00 5. $10.80 & $12.60 6. $23,625

Worksheet 8

A:

1. $15 2. 0.432 3. 390 minutes 4. 5.2km 5. 60% 6. 5 sides 7. 22 8. 14, 28, 42, 56
9. 0.59 10. 6.25

B:

1. 12 : 15 2. 1 : 23 3. 17 : 1 4. 17 : 14 5. 16 : 15

C:

1. 9 2. 12 3. 3 4. 8 5. 5 6. 5 7. 1 8. 5 9. 15 10. 2 11. 3 : 5 12. 8 : 3
13. 7 : 10 14. 3 : 5 15. 9 : 5 16. 12 : 5 17. 3 : 1 18. 3 : 5 19. 3 : 7 : 10 20. 2 : 5 : 8
21. 5 : 2 : 8 22. 5 : 3 : 1

D:

1. $8, $16 2. $9, $45 3. 28g, 35g 4. 250mL, 150mL 5. $24, $40, $8 6. $16, $24, $40

E:

1. 3 teachers 2. Jenny 36, Steven 28 3. 108 children 4. 16 votes 5. $90, $36, $54

F:

7 : 13

Worksheet 9

A:

1. 19.996 2. 83 3. $8\frac{1}{2}$ weeks 4. 820mm 5. 17 6. 20 years 7. $8.70 8. $53.55
9. 160 minutes 10. 0.81

B:

1. 6 2. 12 3. 45 4. 12 5. 15 6. 30 7. 48 8. 18 9. 36 10. 40

C:

1. 2. 3. 4. 5.

D:

1. $^1/_2$ 2. $^2/_3$ or $^4/_6$ 3. $^1/_3$ or $^3/_9$ 4. $^1/_2$ or $^5/_{10}$ 5. $^3/_5$ 6. $^4/_{11}$

E:

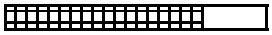
1. $^2/_3$ 2. $^6/_{11}$ 3. $^7/_{10}$ 4. $^1/_4$ 5. $^4/_9$ 6. $^5/_7$ 7. $^1/_6$ 8. $^1/_4$ 9. $^2/_3$ 10. $^2/_5$
11. $^1/_3$ 12. $^4/_9$ 13. $^4/_5$

F:

1. $3^2/_5$ 2. $4^3/_4$ 3. $5^3/_5$ 4. $10^1/_6$ 5. $10^5/_7$ 6. $6^5/_8$ 7. $9^5/_9$
8. $5^7/_{12}$ 9. $^{28}/_5$ 10. $^{15}/_2$ 11. $^{47}/_7$ 12. $^{26}/_3$ 13. $^{43}/_6$ 14. $^{48}/_5$
15. $^{61}/_8$ 16. $^{77}/_{12}$

Worksheet 10

A:

1. 2.592 2. 34.56 3.  4. 6700mL 5. LXXV 6. $^{-}9$ 7. $36 8. $25:$10 9. 400 minutes 10. 9 sides

B:

1. 1 2. $1^{1}/_{3}$ 3. $1^{1}/_{4}$ 4. $1^{4}/_{11}$ 5. $1^{4}/_{7}$ 6. $^{2}/_{5}$ 7. $^{1}/_{4}$ 8. $^{1}/_{3}$ 9. $^{2}/_{3}$ 10. $^{2}/_{11}$

11. $^{11}/_{12}$ 12. $1^{1}/_{12}$ 13. $1^{11}/_{20}$ 14. $1^{7}/_{15}$ 15. $8^{1}/_{20}$ 16. $^{4}/_{15}$ 17. $^{23}/_{42}$ 18. $^{9}/_{40}$

19. $2^{3}/_{5}$ 20. $3^{7}/_{12}$

C:

1. $^{12}/_{25}$ 2. $^{8}/_{25}$ 3. $^{5}/_{25}$ or $^{1}/_{5}$ 4. $^{6}/_{20}$ or $^{3}/_{10}$ 5. $^{13}/_{20}$ 6. $^{1}/_{20}$

D:

1. $^{3}/_{7}$ 2. $^{8}/_{20}$ or $^{2}/_{5}$ 3. $^{5}/_{7}$ 4. $^{14}/_{20}$ or $^{7}/_{10}$ 5. $^{40}/_{200}$ or $^{1}/_{5}$ 6. $10^{1}/_{4}$ m 7. $2^{3}/_{4}$ m 8. $2^{1}/_{12}$ = 125 seconds

Tracking Sheet: ‘In-class’ Activity Sheets

Worksheet	Objectives	Comments														
22	N9															
21	N9															
20	N9															
19	N9															
18	N8															
17	N7															
16	N6															
15	N6															
14	N6															
13	N5															
12	N5															
11	R															
10	R															
9	N2/N3/N4															
8	N2 / N4															
7	N2 / N4															
6	N1															
5	R															
4	R															
3	R															
2	R															
1	R															
Number	Name															

Tracking Sheet: Homework / Assessment Worksheets

Number

Name

Comments

Worksheet	Objectives														
10	N9														
9	N9														
8	N9														
7	N7 / N8														
6	N6														
5	N4 / N5														
4	N5														
3	N1/ N2/N3														
2	Revision														
1	Revision														