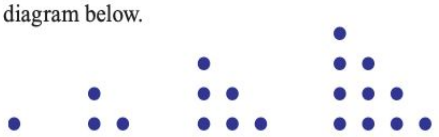
Level 3/4 practice

1 The first 4 triangular numbers are shown in the diagram below.



The sixth triangular number is:

A 28 **B** 10 **C** 15 **D** 21

2 What type of number is 25?

A prime **B** square
C even **D** triangular

3 The first 4 prime numbers are:

A 1, 2, 3, 4 **B** 2, 4, 6, 8
C 1, 3, 5, 7 **D** 2, 3, 5, 7

4 Chloe has $3 and Chrissie has $5. How much do they have altogether?

A $2 **B** $8 **C** $35 **D** $15

5 Susan has $23 and gives Chantelle $7. How much does Susan have left?

A $6 **B** $16 **C** $30 **D** $15

6 There are 685 students in a school. If 156 students are in Year 7, the number of students in the other years is:

A 841 **B** 529 **C** 531 **D** 539

7 There are 387 students in the hall. Another 156 students go into the hall. The number of students in the hall is:

A 443 **B** 543 **C** 433 **D** 443

8 The best estimate for 1687 + 489 is:

A 2000 **B** 2200 **C** 2500 **D** 3000

9 Melissa has 3 red envelopes each containing $35. The total amount is:

A $105 **B** $35 **C** $5 **D** $38

10 The whole school is having an assembly. The 15 classes, each containing 24 students, are sent to the hall. The number of students sent to the hall is:

A 360 **B** 120 **C** 320 **D** 220

11 The temperature was 8°C. It dropped by 10°C. The temperature is now:

A 18°C **B** 2°C **C** −2°C **D** −18°C

12 The temperature overnight was −5°C. It rose by 12°C. The new temperature is:

A 17°C **B** −17°C **C** −7°C **D** 7°C

13 What fraction is shaded in the diagram below?

A $\frac{3}{5}$ **B** $\frac{2}{5}$ **C** $\frac{1}{5}$ **D** $\frac{4}{5}$

14 Name the numerator in $\frac{8}{9}$.

A 9 **B** 89 **C** 98 **D** 8

15 Express $\frac{11}{5}$ as a mixed numeral.

A $3\frac{1}{5}$ **B** $\frac{5}{11}$ **C** $2\frac{1}{5}$ **D** $2\frac{4}{5}$

16 Which fraction is equivalent to $\frac{1}{3}$?

A $\frac{4}{12}$ **B** $\frac{3}{10}$ **C** $\frac{6}{15}$ **D** $\frac{3}{6}$

17 When simplified, $\frac{8}{10}$ is equivalent to:

A $\frac{2}{5}$ **B** $\frac{4}{2}$ **C** $\frac{5}{4}$ **D** $\frac{4}{5}$

18 Simplify $4 + \frac{2}{3}$.

A $\frac{42}{3}$ **B** $4\frac{2}{3}$ **C** $\frac{34}{2}$ **D** $3\frac{2}{4}$

19 Simplify $\frac{3}{10} + \frac{7}{20}$.

A $\frac{10}{30}$ **B** $\frac{37}{20}$ **C** $\frac{13}{20}$ **D** $\frac{73}{200}$

20 Simplify $\frac{4}{5} - \frac{1}{10}$.

A $\frac{7}{10}$ **B** $\frac{3}{5}$ **C** $\frac{4}{10}$ **D** $\frac{4}{50}$

21 There are 51 people travelling to a sports carnival. If each car carries 4 people, the number of cars needed is:

A 12 **B** $12\frac{3}{4}$ **C** 13 **D** $13\frac{1}{4}$

22 As an improper fraction, $1\frac{4}{7}$ is:

A $\frac{14}{7}$ **B** $\frac{11}{7}$ **C** $1\frac{7}{4}$ **D** $\frac{7}{11}$

23 As a mixed number, $\frac{29}{12}$ is:

A $\frac{29}{12}$ **B** $2\frac{9}{12}$ **C** $2\frac{5}{12}$ **D** $\frac{12}{29}$

24 $3 - \frac{5}{12}$ is:

A $3\frac{5}{12}$ **B** $3\frac{7}{12}$ **C** $2\frac{5}{12}$ **D** $2\frac{7}{12}$

25 $\frac{6}{12} + \frac{5}{12} =$

A $\frac{11}{24}$ **B** $\frac{1}{24}$ **C** $\frac{11}{12}$ **D** $\frac{1}{12}$

26 $\frac{1}{3} + \frac{2}{5} =$

A $\frac{3}{5}$ **B** $\frac{3}{15}$ **C** $\frac{5}{6}$ **D** $\frac{11}{15}$

27 Simplify $5 \times \frac{3}{4}$.

A 4 **B** $3\frac{1}{4}$ **C** $2\frac{2}{5}$ **D** $3\frac{3}{4}$

28 Find $\frac{2}{3}$ of \$90.

A \$33 **B** \$60 **C** \$20 **D** \$30

29 Write $5 + \frac{8}{100}$ in decimal form.

A 5.08 **B** 50.8 **C** 0.508 **D** 508

30 Evaluate 1.2 + 3.06.

A 4.8 **B** 3.2 **C** 3.26 **D** 4.26

31 Evaluate 8.7 − 5.31.

A 3.39 **B** 2.66 **C** 2.76 **D** 3.49

32 Evaluate 7×1.4.

A 9.8 **B** 8.3 **C** 7.8 **D** 9.1

33 Evaluate $84.2 \div 2$.

A 4.21 **B** 21.0 **C** 24.1 **D** 42.1

34 Evaluate $8 \div 10$.

A 8 **B** 0.8 **C** 0.08 **D** 80

35 Evaluate 0.18×1000.

A 18 **B** 1.8 **C** 180 **D** 0.0018

36 Express 75% as a simplified fraction.

A $\frac{1}{4}$ **B** $\frac{3}{4}$ **C** $\frac{75}{100}$ **D** $\frac{15}{20}$

37 What fraction is equivalent to $33\frac{1}{3}\%$?

A 33 **B** $\frac{1}{3}$ **C** $33\frac{1}{3}$ **D** 3

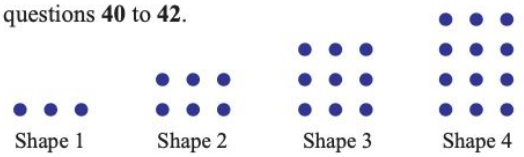
38 A \$70 shirt has 10% off. The new *price* is:

A \$70 **B** \$63 **C** \$10 **D** \$7

39 A \$250 camera is to be discounted by 20%. The *discount* is:

A \$200 **B** \$50 **C** \$230 **D** \$270

Use the pattern of counters shown below to answer questions **40** to **42**.



40 The number of counters needed to make shape 5 is:

A 15 **B** 25 **C** 5 **D** 10

41 A rule that could *not* be used to find the number of counters needed for each shape is:

A it's the 3 times table
B start with 3 and add 3
C multiply the shape number by 3
D add 3 to the shape number

42 The number of counters needed to make shape 100 is:

A 100 **B** 300 **C** 103 **D** 130

For questions **43** to **45** consider the number pattern 6, 7, 8, 9, …

43 The 5th term of the number pattern is:

A 5 **B** 8 **C** 10 **D** 30

44 A rule that could be used to find each term given its position number is:

A position number + 5
B position number + 6
C position number × 6
D position number × 6 + 1

45 The 100th term of the pattern is:

A 105 **B** 106 **C** 600 **D** 109

46 $6 + 3 \times 4 =$

A 36 **B** 18 **C** 13 **D** 7

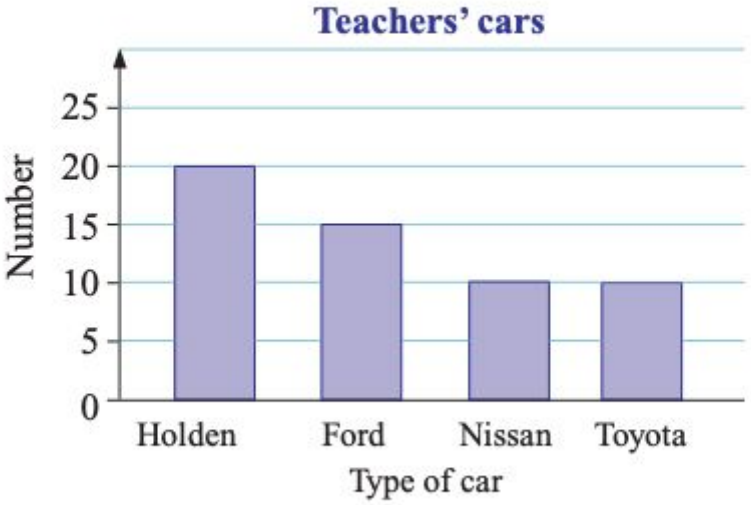
47 $4 \times (2 + 5) - 1 =$

A 27 **B** 12 **C** 6 **D** 0

48 5 cm 3 mm is equal to:

A 53 cm **B** 5.3 cm
C 0.53 cm **D** 5300 cm

Use the graph below to answer questions **94** to **96**.



94 The title of this graph is:

A Number **B** Type of car
C Teachers' cars **D** Holden

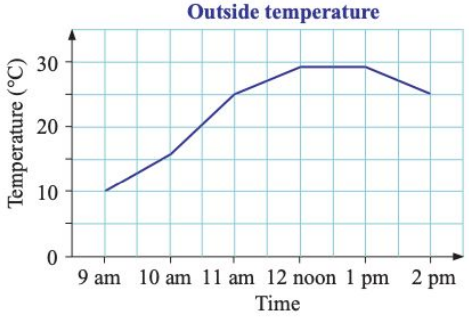
95 The label of the horizontal axis is:

A Number **B** Type of car
C Teachers' cars **D** Holden

96 The number of Nissans is:

A 20 **B** 15 **C** 10 **D** 55

Use the graph below for questions **97** to **100**.



97 The type of graph is:

A sector **B** column **C** bar **D** line

98 The temperature at 11 am is:

A 10°C **B** 20°C **C** 25°C **D** 30°C

99 The vertical axis goes up by:

A temperature **B** 1°C
C 5°C **D** 10°C

100 An estimate for the temperature at 9:30 am is:

A 10°C **B** 13°C **C** 15°C **D** 20°C

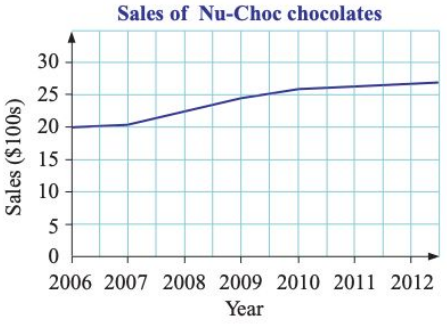
101 In a survey, 85% of people stated that smoking should be allowed in restaurants. Which group was probably surveyed?

A any member of the population
B people in a restaurant
C people exiting a tobacco store
D restaurant owners

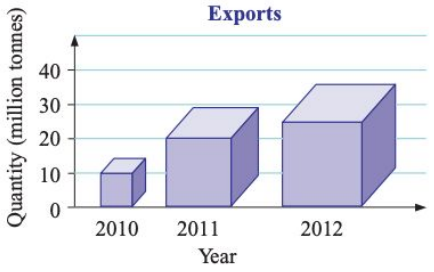
102 Which graph accurately represents the information?

A

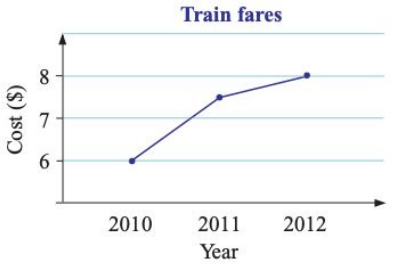
B



C



D



Check your answers

1 D	2 B	3 D	4 B	5 B
6 B	7 B	8 B	9 A	10 A
11 C	12 D	13 A	14 D	15 C
16 A	17 D	18 B	19 C	20 A
21 C	22 B	23 C	24 D	25 C
26 D	27 D	28 B	29 A	30 D
31 A	32 A	33 D	34 B	35 C
36 B	37 B	38 B	39 B	40 A
41 D	42 B	43 C	44 A	45 A
46 B	47 A	48 B	49 B	50 D
51 B	52 C	53 D	54 C	55 C
56 B	57 C	58 B	59 B	60 B
61 C	62 D	63 A	64 A	65 C
66 B	67 A	68 B	69 D	70 B
71 A	72 D	73 B	74 D	75 B
76 A	77 C	78 C	79 C	80 D
81 A	82 B	83 C	84 B	85 D
86 AC	87 C	88 B	89 D	90 B
91 B	92 D	93 D	94 C	95 B
96 C	97 D	98 C	99 C	100 B
101 C	102 B			

Number and Indices level 4/5 and above

1 Write the multiples of:

a 2 between 13 and 35 **b** 9 between 26 and 73 **c** 4 that are less than 65

2 **a** List the multiples of 8 less than 100.

b List the multiples of 10 less than 100.

c Write the common multiples of 8 and 10 that are less than 100.

d What is the LCM of 8 and 10?

3 **a** Write the factors of 20.

b Write the factors of 35.

c What is the HCF of 20 and 35?

4 Use a factor tree to write the following numbers as a product of prime factors.

a 50 **b** 130 **c** 520

5 Use the method of division by primes to write the following numbers as a product of prime factors.

a 140 **b** 230 **c** 540

6 **a** Write 25 and 40 as a product of prime factors.

b Find the HCF of 25 and 40.

c Find the LCM of 25 and 40.

7 **a** Write 180 and 240 as a product of prime factors.

b Find the HCF of 180 and 240.

c Find the LCM of 180 and 240.

8 Find the HCF and LCM of the following pairs of numbers. First write each number as a product of prime factors.

a 70 and 84 **b** 60 and 90 **c** 280 and 400

9 Find the following.

a $\sqrt{9}$ **b** $\sqrt{1}$ **c** $\sqrt{169}$ **d** $\sqrt[3]{125}$ **e** $\sqrt[3]{729}$ **f** $\sqrt[3]{1331}$

10 Which of the numbers 2, 3, 4, 5, 6, 8, 9, 10, 11, 12 are factors of:

a 4884? **b** 23 400? **c** 161 040?

11 Between which two numbers does $\sqrt{70}$ lie?

12 Evaluate:

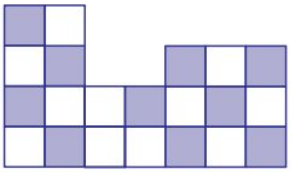
a $986 \div 29$ **b** $992 \div 64$

13 Evaluate:

a $16 - 4 \times 2$ **b** $3^2 + 7 \times 2^3$ **c** $\sqrt{\frac{10^2 + 8}{3}}$

Fractions

1 What fraction of the diagram shown is:
a shaded? **b** unshaded?



2 If $\frac{5}{13}$ of a diagram is shaded, what fraction is unshaded?

3 Convert $\frac{47}{9}$ to a mixed number.

4 Convert $8\frac{4}{7}$ to an improper fraction.

5 Complete: $\frac{7}{12} = \frac{49}{\square}$

6 Arrange in ascending order: $\frac{7}{10}$, $\frac{4}{5}$, $\frac{9}{20}$

7 State the reciprocal of $\frac{5}{8}$.

8 Simplify the following.
a $\frac{4}{5} + \frac{1}{3}$ **b** $\frac{11}{12} - \frac{1}{3}$ **c** $\frac{3}{7} \times \frac{1}{4}$ **d** $\frac{5}{6} \div \frac{1}{4}$

9 Simplify $\frac{1}{2} \times \frac{2}{3} + \frac{1}{4}$.

10 Katzurina donated $\frac{2}{11}$ of her weekly income to charity. If her weekly income is $495, how much did she donate?

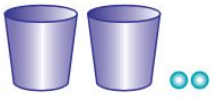
Algebra

1 If there are p marbles in each cup, write algebraic expressions for the total number of marbles in each of the following diagrams.

a

b

c



d

2 Simplify the following.
a $6 \times p$ **b** $g \times r$ **c** $m \times 5$
d $8 \times a \times b$ **e** $3 \times m \times m$ **f** $5 \times a + 3 \times q$

3 Insert multiplication signs to show the meaning of:

a $3p$ **b** ab **c** m^2 **d** $5x^2$ **e** $6pq$

4 Simplify the following.

a $p + p + p$ **b** $y + y + y + y + y$ **c** $z \times 1$

d $3pq \times 1$ **e** $0 \times 5p$

5 If $m = 3$ and $n = 4$, evaluate the following.

a mn **b** $5mn$ **c** $7m - 3n$ **d** n^2 **e** $4n^2$

6 Write the following in fraction form.

a $t \div 2$ **b** $g \div r$ **c** $r \div g$ **d** $4w \div 7$ **e** $3 \div 2x$

7 Show the meaning of the following expressions by inserting a division sign.

a $\frac{k}{3}$ **b** $\frac{4}{m}$ **c** $\frac{p}{q}$ **d** $\frac{3e}{4}$ **e** $\frac{mn}{t}$

8 If $p = 4$ and $q = 5$, evaluate the following.

a $\frac{q}{5}$ **b** $\frac{24}{p}$ **c** $\frac{5p}{q}$ **d** $\frac{4q}{p}$ **e** $\frac{5p}{2q}$

9 If $p = 7$ and $q = 3$, evaluate the following.

a $3(p + 1)$ **b** $4(q - 3)$ **c** $q(q + 1)$ **d** $5(q - 4)$ **e** $pq(p - 5)$

10 If $p = 12$ and $q = 5$, evaluate the following.

a $\frac{p + 9}{3}$ **b** $\frac{q - 3}{2}$ **c** $\frac{26}{p + 1}$ **d** $\frac{p + 6}{q + 1}$ **e** $\frac{3p + 3}{q + 8}$

3 Insert multiplication signs to show the meaning of:

a $3p$ **b** ab **c** m^2 **d** $5x^2$ **e** $6pq$

4 Simplify the following.

a $p + p + p$ **b** $y + y + y + y + y$ **c** $z \times 1$

d $3pq \times 1$ **e** $0 \times 5p$

5 If $m = 3$ and $n = 4$, evaluate the following.

a mn **b** $5mn$ **c** $7m - 3n$ **d** n^2 **e** $4n^2$

6 Write the following in fraction form.

a $t \div 2$ **b** $g \div r$ **c** $r \div g$ **d** $4w \div 7$ **e** $3 \div 2x$

7 Show the meaning of the following expressions by inserting a division sign.

a $\frac{k}{3}$ **b** $\frac{4}{m}$ **c** $\frac{p}{q}$ **d** $\frac{3e}{4}$ **e** $\frac{mn}{t}$

8 If $p = 4$ and $q = 5$, evaluate the following.

a $\frac{q}{5}$ **b** $\frac{24}{p}$ **c** $\frac{5p}{q}$ **d** $\frac{4q}{p}$ **e** $\frac{5p}{2q}$

9 If $p = 7$ and $q = 3$, evaluate the following.

a $3(p + 1)$ **b** $4(q - 3)$ **c** $q(q + 1)$ **d** $5(q - 4)$ **e** $pq(p - 5)$

10 If $p = 12$ and $q = 5$, evaluate the following.

a $\frac{p + 9}{3}$ **b** $\frac{q - 3}{2}$ **c** $\frac{26}{p + 1}$ **d** $\frac{p + 6}{q + 1}$ **e** $\frac{3p + 3}{q + 8}$

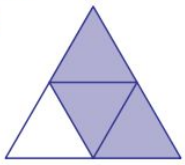
Fractions, decimals and percentages

1 Complete the following table.

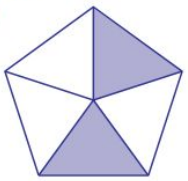
	Fraction	Decimal	Percentage
a	$\frac{1}{10}$		
b		0.2	
c			25%
d	$\frac{1}{3}$		
e		0.375	
f			50%
g	$\frac{5}{8}$		
h			$66\frac{2}{3}\%$
i		0.85	
j	$\frac{98}{100}$		

2 What percentage of these diagrams is:

a **i** shaded? **ii** unshaded?



b



3 Express each percentage as a simplified fraction.

a 25% **b** 60% **c** 72% **d** 86%

4 **a** Write 59 out of 100 as a percentage.

b Emily scored 78 out of 100 in her Science exam. Write this as a percentage.

c Write 33 out of 50 as a percentage.

d Linda scored 19 out of 25 in her Japanese exam. Write this as a percentage.

5 Express these percentages as decimals.

a 43% **b** 29% **c** 123% **d** 0.35%

6 Express the following as percentages.

a $\frac{1}{4}$ **b** 0.312 **c** 4.8 **d** $\frac{2}{3}$ **e** $\frac{5}{8}$

7 **a** Write 78 g as a percentage of 500 g.

b Write 38c as a percentage of $2.

c Write 35 kg as a percentage of 140 kg.

8 Convert each to a percentage and arrange in ascending order: $\frac{3}{5}$, 68%, 0.48, $\frac{2}{3}$

9 **a** Increase 40 m by 12%.

b Katherine buys pens for 50c each. She sells them at an increased price of 150%. What is the selling price?

c Decrease 200 m by 30%.

10 In a class of 28 students there are 13 boys. Write the ratio of boys to girls.

11 Express each ratio in simplest form.

a 12 : 40 **b** 30 : 108

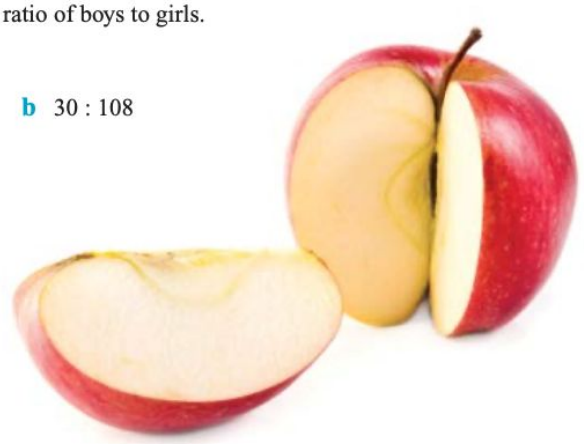
12 State the value of 8 in 0.148 507.

13 Express $\frac{7}{100} + \frac{9}{1000}$ as a decimal.

14 **a** Express 0.08 as a fraction.

b Express $\frac{3}{4}$ as a decimal.

c Express $\frac{7}{9}$ as a decimal.



15 Write 15.0775 correct to the nearest hundredth.

16 Insert one of $>$, $<$ or $=$ to make the following statements correct.

a 21.12 21.012 **b** 19.6 19.60

17 The decimal number closest to 0.47 is:

A 0.45 **B** 0.41

C 0.5 **D** 0.05

18 Simplify the following.

a $4.8 \div 0.4 \times 6$ **b** $1.2 \times 0.86 \times 3$

c $16.6 + 2.38 + 4.7$

19 Stacey purchased 15.4 m of fabric. She intends to make three shirts. Each shirt requires 4.25 m of fabric.

a How much fabric is used for making the shirts?

b What length of fabric remains?

Data investigation

1 For the scores 11, 14, 15, 19, 19, 21 find the:

a mean **b** mode **c** median **d** range.

2 For the scores in this stem-and-leaf plot find the:

a mean **b** mode

c median **d** range.

Stem	Leaf
2	7 8 8
3	0 0 1 2 3 4 5 6 6
4	1 2 4 4 4 6 8
5	3 5 7 8
6	2 3

3 The back-to-back stem-and-leaf plot compares the marks gained by class A and class B in their half-yearly Mathematics exam.

a Find the mean, mode, median and range for each class.

b Which class performed better? Explain your answer.

Class B Leaf	Stem	Class A Leaf
2 1	2	8 8
6 4 2 1	3	0 3 5 6
6 5 3 1 0	4	0 2 6 6 8
1 1 0	5	3 6 9
6	6	7

4 **a** Complete this frequency distribution table.

b Calculate the mean correct to 1 decimal place.

Score (x)	Frequency (f)	$f \times x$
8	6	
9	11	
10	15	
11	12	
12	8	
13	7	
14	8	
	$\Sigma f =$	$\Sigma fx =$

5 Find the mode and range of each set of scores.

a

Score (x)	Frequency (f)
11	6
12	14
13	5
14	11
15	4

b

Score (x)	Frequency (f)
53	28
54	36
55	12
56	45
57	33

4 **a** Complete this frequency distribution table.
b Calculate the mean correct to 1 decimal place.

Score (x)	Frequency (f)	$f \times x$
8	6	
9	11	
10	15	
11	12	
12	8	
13	7	
14	8	
	$\Sigma f =$	$\Sigma fx =$

5 Find the mode and range of each set of scores.

a

Score (x)	Frequency (f)
11	6
12	14
13	5
14	11
15	4

b

Score (x)	Frequency (f)
53	28
54	36
55	12
56	45
57	33