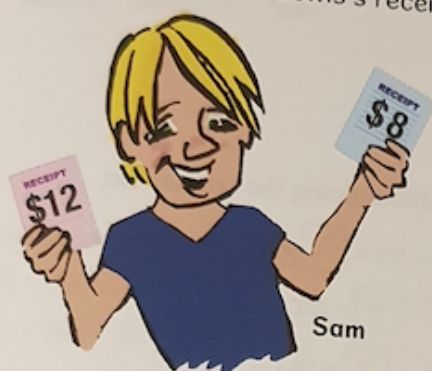


Activity 1

- 1 Write an equation for each problem.
Find the missing number.



- 2 Sam and Lewis spent the same amount at the shopping mall.
What is the missing number on Lewis's receipt?

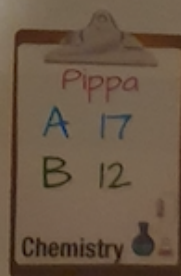
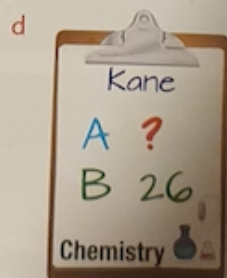
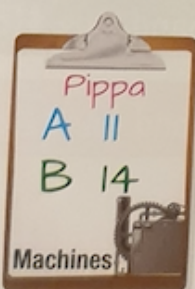
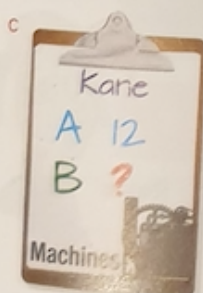
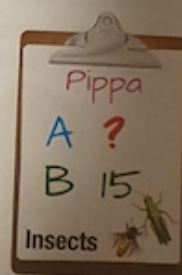
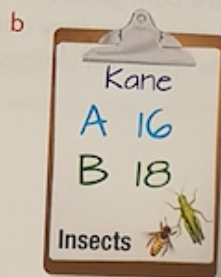
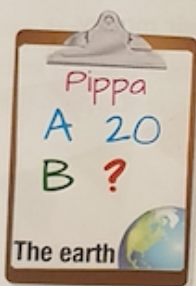
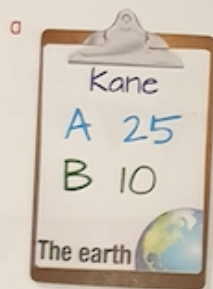


Sam



Lewis

- 3 Kane and Pippa got the same total number of points in each section of their science project.
Write an equation for each.
Look for relationships to find the missing numbers without having to calculate.





4

$98 + 56 = \boxed{?} + 54$
Ariana and Jaxson worked out what the box stands for in this number sentence in two different ways.



Ariana

$$98 + 56 = \boxed{?} + 54$$

Take 2 from 56 and give it to 98 to make the tidy number 100.

$$98 + 56 = 100 + 54$$

$$\text{So } \boxed{?} = 100$$

Comparing to tidy numbers



Jaxson

$$98 + 56 = \boxed{?} + 54$$

54 is 2 less than 56

So $\boxed{?}$ must be 2 more than 98 which is 100.
Comparing both sides of the = sign

Explain to a partner what each has done.
Say which way you like better and why.



5

Work out what $\boxed{?}$ stands for in these without doing the calculation.

a $99 + 73 = \boxed{?} + 71$

b $48 + 53 = \boxed{?} + 51$

c $102 + \boxed{?} = 105 + 67$

d $87 - \boxed{?} = 84 - 46$

e $75 - 48 = 72 - \boxed{?}$

f $186 - \boxed{?} = 183 - 45$

- 6 Maru and Rosie were both given \$30 to spend at the school fair.
These strip graphs show how they each spent their money.
How much did Rosie spend on clothes?

Kris



Food \$12

Second-hand toys \$18

Food \$6

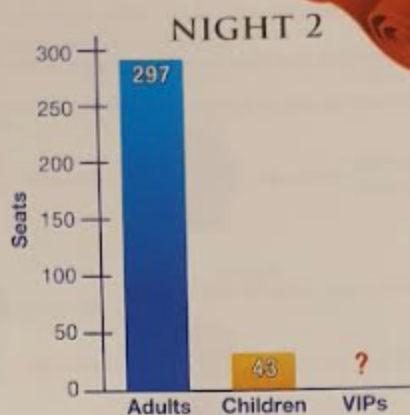
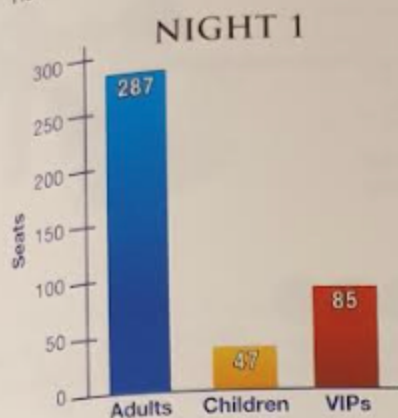
Chocolate wheel \$8

Second-hand clothes \$?

Rosie



- 7 Work these out **without** doing the calculations.
All the seats at a concert were full on night 1 and night 2.
How many VIPs were there on the second night?



- 8 Find the missing numbers in these.

a $87 + 12 = 83 + ?$

b $183 + 20 + 24 = 193 + ?$

c $? + 143 = 143 + 35 + 15$

d $3267 + ? + 125 = 3267 + 185$

e $285 - 76 = 280 - ?$

f $? - 110 = 376 - 120$

Remember both sides of your equation need to balance.



- 9 Choose three equations from **question 8**.

Explain to a partner how you worked out the answer.

If you did it differently from your partner decide whose way was more efficient.

10 **Challenge**

Find three different answers to each of these.

a $76 + ? = 85 + ?$

b $245 + ? = ? + 179$

c $93 - ? = 134 - ?$



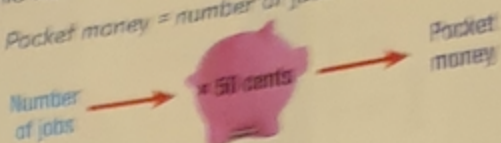
Rules

Sometimes a rule can be used to solve a problem.

Example

Charlie worked out how much pocket money he got each week like this.

$$\text{Pocket money} = \text{number of jobs} \times 50 \text{ cents}$$



Last week Charlie did 6 jobs



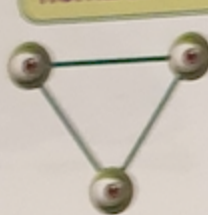
300 cents (\$3)
pocket money

$$\begin{aligned} \text{Pocket money} &= 6 \times 50 \text{ cents} \\ &= 300 \text{ cents} \\ &= \$3 \end{aligned}$$

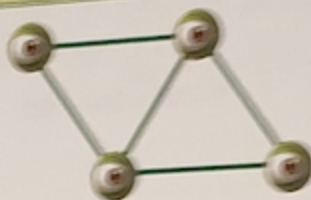
Activity 2

- 1 The number of eyes needed in this pattern is given by this rule.

$$\text{number of eyes} = \text{number of triangles} \times 2$$



1 triangle



2 triangles



3 triangles

Find the number of eyes if the pattern has these numbers of triangles.

- a 23 b 37 c 108 d 379

- 2 The number of stars on each size decoration is given by this rule.

$$\text{number of stars} = \text{size number} \times 3$$



Size 1



Size 2



Size 3

How many stars would be on these sizes?

- a 5 b 20 c 15 d 25 e 17

NUMEROUS STARS

$$17 = 10 + 5 + 2$$

- 3 Aaron plays games on a website that charges using this rule.

$$\text{cost of playing games} = \text{number of days games are played} \times 40 \text{ cents}$$

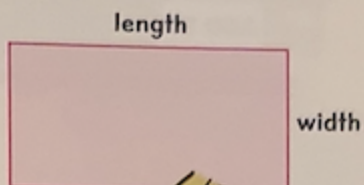


How much would it cost for Aaron to play the games on this website for these times?

- a 5 days b 10 days c a week
d 2 weeks e 4 weeks

- 4 This is the rule for finding the **area** of a rectangle.

$$\text{area} = \text{length} \times \text{width}$$



What is the area of these rectangles?

- a length = 70 cm, width = 5 cm
b length = 14 cm, width = 10 cm
c length = 150 cm, width = 8 cm
d length = 80 cm, width = 20 cm

The units for these areas will be cm^2 .



- 5 This is the rule for finding the **perimeter** of a rectangle.

$$\text{perimeter} = 2 \times \text{length} + 2 \times \text{width}$$

Find the perimeter of the rectangles given in **question 4**.

Use your addition strategies to help.

NUMERACY STRATEGY

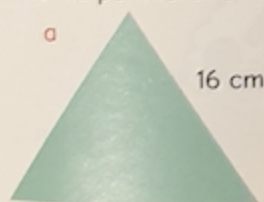
70 = 7 tens or 7×10



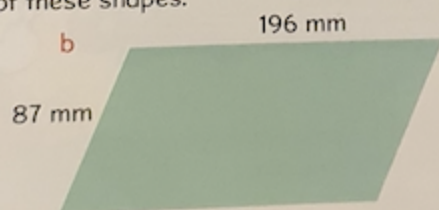
- 6 This is the rule for finding the perimeter of any shape.

$$\text{perimeter of a shape} = \text{the sum of the lengths of all the sides}$$

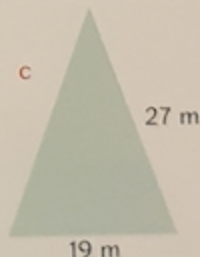
Find the perimeter of each of these shapes.



Equilateral triangle



Parallelogram



Isosceles triangle

Activity 3

1 What numbers will come out of these machines?



2 On your copy, fill in the tables for these machines.

a

in	out
8	
26	
63	
112	

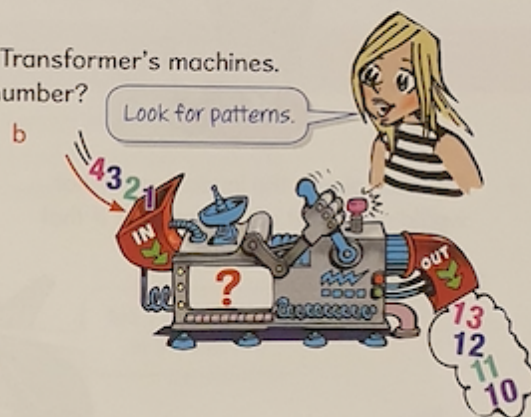
b

in	out
5	
12	
20	
300	

c

in	out
50	
110	
500	
1000	

3 1, 2, 3 and 4 are put into some of Professor Transformer's machines. What does each of these machines do to a number?

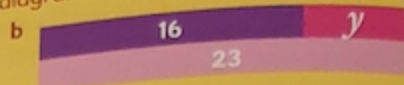
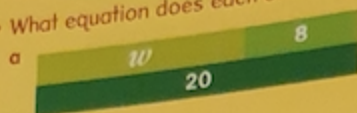


4 What does each of these machines do to numbers?



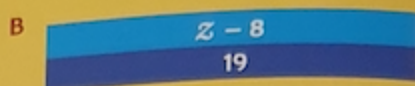
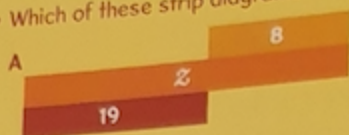
Discussion

- What equation does each of these strip diagrams show?



- How else could you write each equation so that you can work out the value of the letter? What is the value of the letter in each?

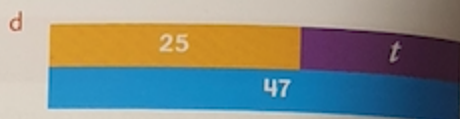
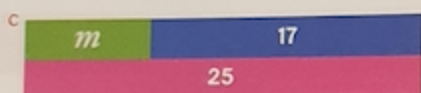
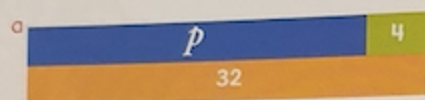
- Which of these strip diagrams for $z - 8 = 19$ would best help you to find the value of z .



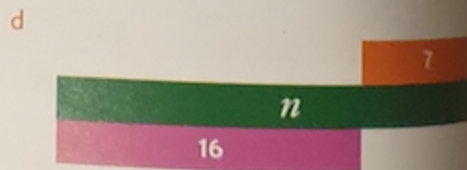
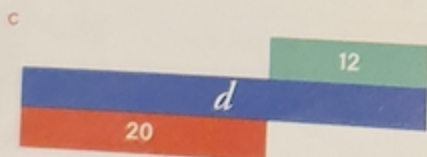
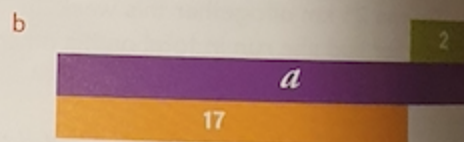
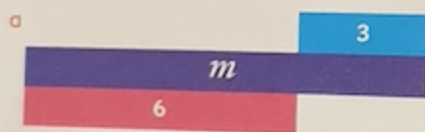
Think of family of facts equations.

Activity 4

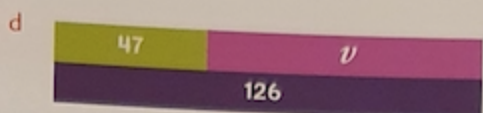
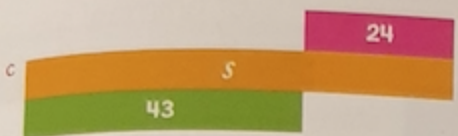
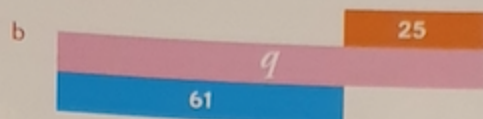
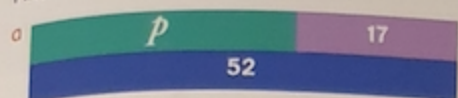
- Write an equation for each of these strip diagrams. Find the value of the letter.



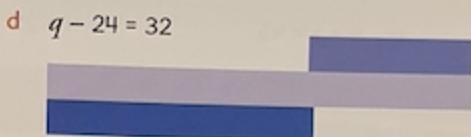
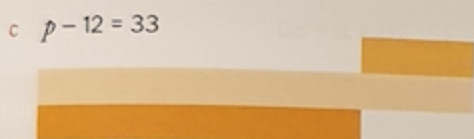
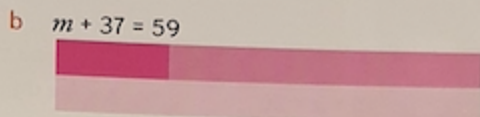
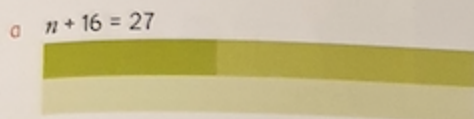
- Write an equation for each of these strip diagrams. Find the value of the letter.



- 3 Write an equation for each of these strip diagrams.
Find the value of the letter.



- 4 On your copy, fill in the strip diagrams for each of the equations.
Use it to find the value of the letter.



- 5 Find the value of the letter which makes these true.

a $x + 5 = 11$

b $y + 8 = 19$

c $m + 17 = 25$

d $p - 24 = 60$

e $r - 20 = 26$

f $n + 51 = 87$

g $112 + g = 184$

h $j - 150 = 237$

k $s - 138 = 162$

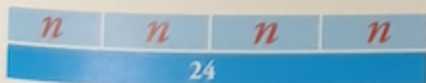
NUMERACY STRATEGY

Use addition strategies like place value partitioning and adding and subtracting tidy numbers to help.

You could draw a strip diagram.

There are 4 cat rooms and 24 cats altogether at a shelter.
Each room has the same number of cats.

Jess drew this strip diagram.



n is the number of cats in each room.

- a Explain Jess' diagram
b How many cats are in each room?

- 7 Max drew these strip diagrams for the other animals at the shelter.
Write an equation for each one.
How many of each animal are there in each room?
These letters stand for the number of each of these animals.

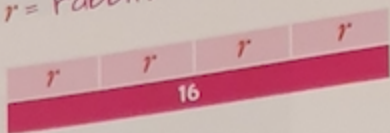
$r = \text{rabbits}$

$d = \text{dogs}$

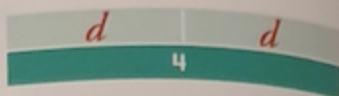
$b = \text{budgies}$

$g = \text{guinea pigs}$

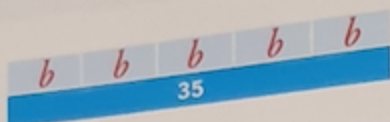
a



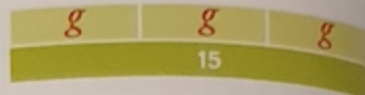
b



c



d



- 8 Find the value of the letters in these equations.

a $5 \times a = 20$

b $7 \times b = 49$

c $6 \times d = 24$

d $p \div 4 = 2$

e $q \div 6 = 3$

f $w \div 9 = 6$

g $9 \times y = 45$

h $r \div 4 = 25$

i $20 \times z = 80$



9 Fact file

40 36 36 9

3 **A** 14 12 36

7 18 12 36

36 30 36 9

Find the missing numbers.

On your copy, put the red letter that is beside each one above its answer.

The first one has been done.

A $14 + 17 = 31$

Y $2 \times ? = 60$

H $21 \div ? = 7$

S $31 - ? = 22$

B $? \div 5 = 8$

V $29 + ? = 41$

I $42 - ? = 24$

E $? \div 4 = 9$

F $6 \times ? = 42$

