1

[2016]

Each shape stands for a number.

2ND

36 → ⊘ = $\frac{36}{2}$ = 18

32 ◯ ◯ 32 ←Total 100

Total 96

1ST △ = $\frac{96}{3}$ = 32
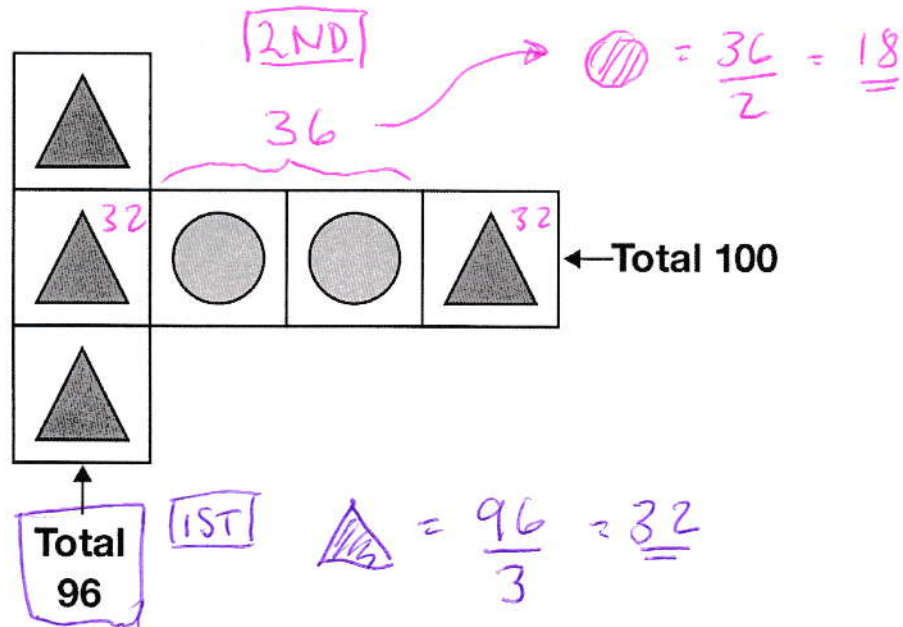
Work out the **value** of each shape.

△ = _32_

◯ = _18_

[2 marks]

2

[2014]

n stands for a whole number.

2n is greater than 30 → n IS GREATER THAN 15

5n is less than 100 → n IS LESS THAN 20
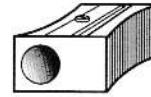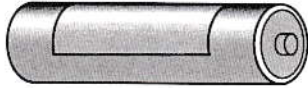
Write **all** the numbers that *n* stands for.

_16, 17, 18, 19_

[1 mark]

3

[2009]

One battery weighs the same as **60** paperclips.

One pencil sharpener weighs the same as **20** paperclips.

[SO 3 SHARPENERS SAME AS 60 PAPERCLIPS!]

How many pencil sharpeners weigh the same as one battery?

$$\boxed{3}$$

How many paperclips weigh the same as **2** batteries and **4** pencil sharpeners together?

Show your method

2 BATTERIES ⟶ 120 PAPER CLIPS
4 SHARPENERS ⟶ 80 PAPER CLIPS
                    200

$$\boxed{200}$$

[3 marks]

4

[2006]

k stands for a whole number.

k + **7** is greater than 100   *K IS GREATER THAN 93*

k − **7** is less than 90   *k IS LESS THAN 97*
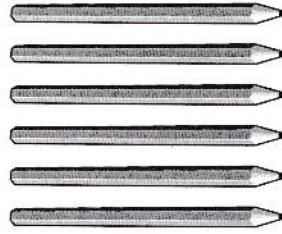
Find **all** the numbers that *k* could be.
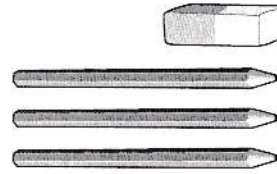
94, 95, 96

[1 mark]

5

[2016]

6 pencils cost **£1.68**

[IST]

PENCIL IS $\frac{168}{6}$ = 28p

3 pencils and 1 rubber cost **£1.09**

What is the cost of **1 rubber**?

Show your method

3 PENCILS

$3 \times 28 = 84$

∴ RUBBER

$109 - 84 = 25$

| 25P |

[2 marks]

6

[Extra]

Here is an equation.

$$m - 2n = 10$$

When $n = 20$ what is the value of m?

$m - 2 \times 20 = 10$

$m - 40 = 10$ $m = \underline{50}$

$m = 50$

When $m = 20$ what is the value of n?

$20 - 2n = 10$

$2n = 10$ $n = \underline{5}$

$n = 5$

[2 marks]

7

[2008]

m stands for a whole number greater than 10 and less than 20

[handwritten:] [11, 12, 13, ..., 19]

n stands for a whole number greater than 2 and less than 10

[handwritten:] [3, 4, 5, ..., 9]

What is the **smallest** number that *m* × *n* could be?

[handwritten:] 11 × 3   33

What is the **largest** number that *m* − *n* could be?

[handwritten:] 19 − 3   16

[2 marks]

8

[2000]
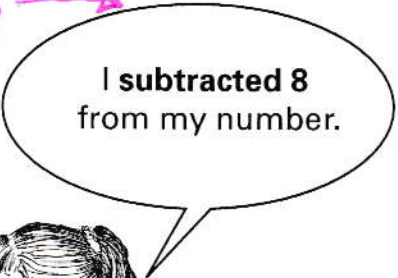
Leon and Sara each started with **different** numbers.

[handwritten:] DIFFERENCE IS 13

I **added 5** to my number.

I **subtracted 8** from my number.

Leon

Sara

Leon and Sara both get the **same** answer.

What numbers could they have started with?

[handwritten:] Leon [1]   Sara [14]

[handwritten:] ANY NUMBERS WITH A DIFFERENCE OF 13!

[1 mark]

$n = 22$

What is $2n + 9$?

$$2 \times 22 + 9 = 44 + 9 \qquad \boxed{53}$$
$$= \underline{\underline{53}}$$

$2q + 4 = 100$

Work out the value of q.

$$2q = 96$$

$q = \boxed{48}$

[2 marks]

Sapna and Robbie have some biscuits.

Altogether they have **14** biscuits. → 7 EACH IF THEY HAD THE SAME!

Sapna has 2 more biscuits than Robbie.

GIVE ONE OF ROBBIES TO SAPNA

How many biscuits do Sapna and Robbie each have?

Sapna $\boxed{8}$ Robbie $\boxed{6}$

[2 marks]

11

[2001]

p and q each stand for whole numbers.

$$p + q = 1000$$ → SOO IF THEY WERE THE SAME

p is 150 **greater** than q. → ADD 75 TO P ; SUBTRACT 75 FROM q

Calculate the numbers **p** and **q**.

Show your method

$$P = 500 + 75$$

$$q = 500 - 75$$

P=575, q=425

[1 mark]

12

[2010]

An iced cake costs 10p more than a plain cake.

Sarah bought two of each cake.

They cost £1 altogether.

→ ONE OF EACH COSTS 50p!
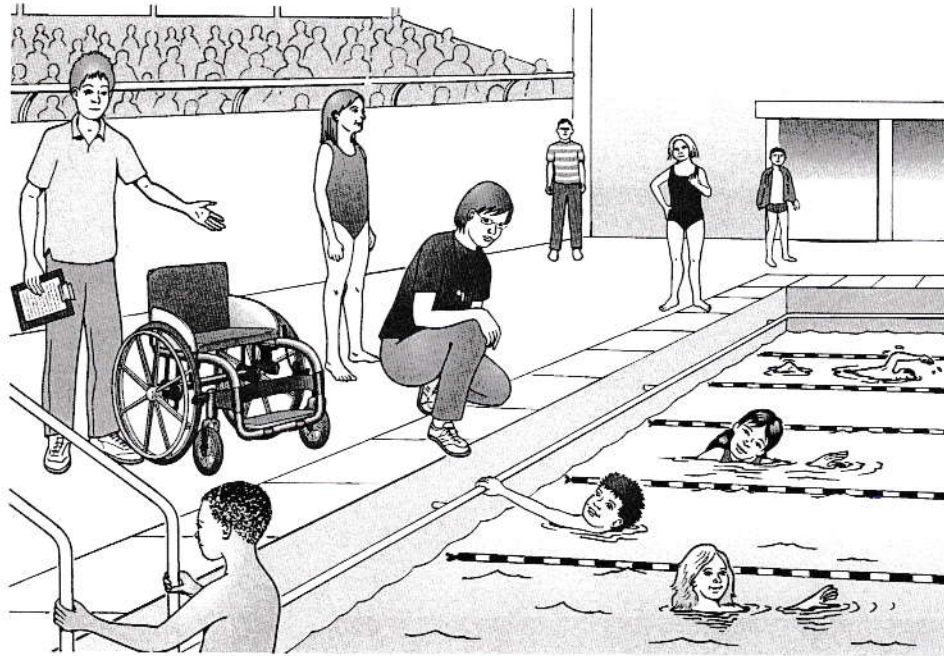
What is the cost of an **iced** cake?

Show your method

ONE OF EACH COST 50p [25p EACH, IF PRICE WAS THE SAME!]

∴ ICED = 25 + 5

PLAIN = 25 - 5

30P

[2 marks]

Emily, Ben and Nisha take part in a sponsored swim to collect money for charity.

Emily collects £2.75 **more** than Nisha. 2ND

Ben collects £15

Nisha collects £7 **less** than Ben. 1ST

Altogether how much money do the three children collect?

Show your method

NISHA = 15 − 7 = £8

EMILY = 8 + 2.75 = £10.75

TOTAL = £15 + £8 + £10.75   £33.75

[2 marks]
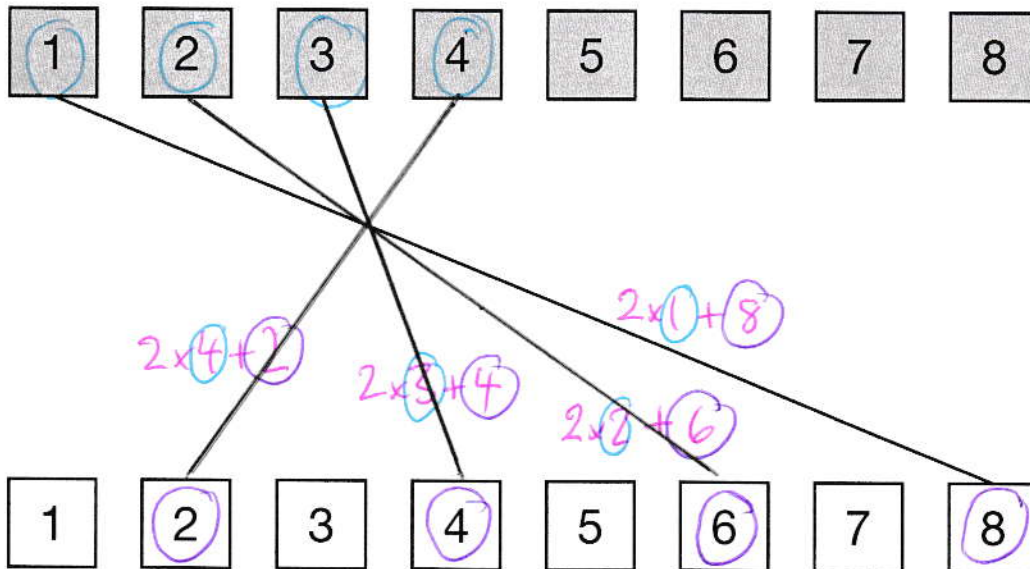
14

[Extra]

g stands for a number on a grey card.

w stands for a number on a white card.

Join all pairs of numbers that match this rule:

$$2g + w = 10$$

One has been done for you.

[2 marks]

15

[Extra]

Here is an equation.

$$k = 100 - 4n$$

Find the value of *k* when *n* = 60

$k = 100 - 4 \times 60$

$= 100 - 240$

$k = \boxed{-140}$

Find the value of *n* when *k* = 99

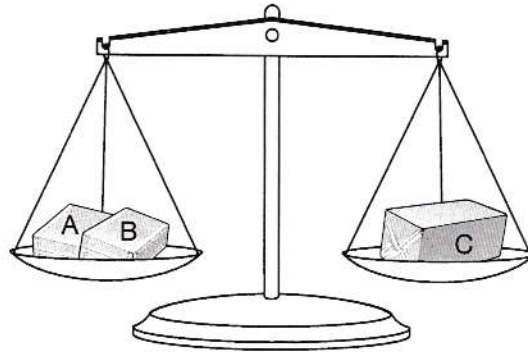$99 = 100 - 4n$

$4n = 1$

$n = \boxed{\dfrac{1}{4}}$

[2 marks]

16

[2009]

Amir has three parcels.

Parcels A and B together weigh the same as parcel C.

The three parcels weigh 800 grams altogether.

1ST → C WEIGHS 400g!

Parcel A weighs 250g.

How much does parcel B weigh?

Show your method

$$A + B = 400$$
$$250 + B = 400$$
$$B = \underline{\underline{150}}$$

150g

[2 marks]
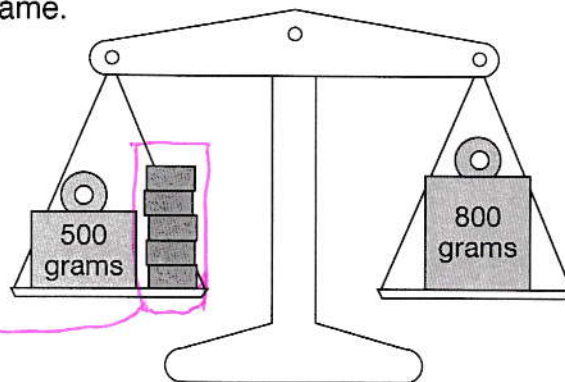

17

[2006]

Lin has five blocks which are all the same.

She balances them on the scale with two weights.

1ST

THESE MUST WEIGH 300g

500 grams

800 grams

Calculate the weight of **one** block.

Show your method

$$5B = 300$$
$$B = \frac{300}{5}$$
$$= \underline{\underline{60}}$$

60g

[2 marks]

Look at these expressions.

$$5y - 8$$
first
expression

$$3y + 5$$
second
expression

What value of y makes the two expressions equal?

Show your method

$$5y - 8 = 3y + 5$$
$$5y = 3y + 13$$
$$2y = 13$$
$$y = 6.5$$

$$\boxed{6.5}$$

[2 marks]

A shop sells school uniform.

DIFFERENCE
IS ONE
SHIRT

Two shirts and one jumper cost **£29**

One shirt and one jumper cost **£21**

DIFFERENCE
IS £8

How much does **one jumper** cost?

ONE SHIRT COSTS £8

SO JUMPER = 21 - 8

= 13

£ 13

[2 marks]

20

[2014]

Alfie has two sticks.

He puts them end to end.

Not actual size

80cm

40cm EACH, IF EQUAL
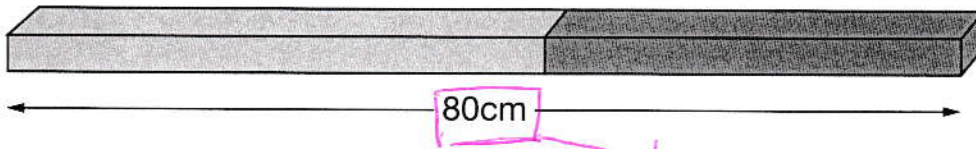
One stick is **10cm longer** than the other stick.

How long is the longest stick?

$40 + 5$

45 cm

[1 mark]

21

[2010]

Sarah, Amy and Liam stand on some weighing scales two at a time.

Here are the measurements:

Sarah and Amy	**70kg**
Sarah and Liam	**80kg**
Liam and Amy	**80kg**

1ST

LIAM IS 10kg MORE THAN AMY

How much does Liam weigh?

Show your method

LIAM + AMY = 80

LIAM IS 10 kG MORE THAN AMY

⇒ LIAM = 45, AMY = 35

45 kG

[2 marks]

22

[2007]

Hassan bought **a notebook** and **a pen**.
He paid **£1.10**

Kate bought **a notebook** and **2 pens**.
She paid **£1.45**

[IST]
DIFFERENCE IS ONE PEN
[AND 35p!]

Calculate the cost of a notebook.

Show your method

ONE PEN COST 35p
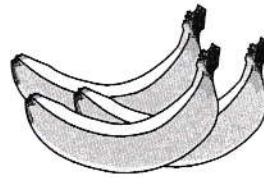
NOTEBOOK = 110 - 35
         = 75
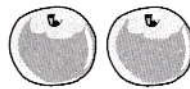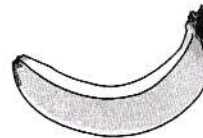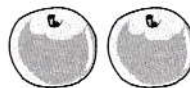
75P

[2 marks]

23

[2015]

A shop sells fruit.

Chen buys 2 apples and 3 bananas.
He pays £2.35

[DIFFERENCE IS
2 BANANAS AND £1·10]

Megan buys 2 apples and 1 banana.
She pays £1.25

How much does one banana cost?

Show your method

TWO BANANAS COST £1·10

⟹ ONE BANANA COSTS 55p

55P

[2 marks]