

GCSE Mathematics

Non Calculator

Foundation Tier

Free Practice Set 4

1 hour 30 minutes



ANSWERS

Marks shown in brackets for each question (2)

Typical Grade Boundaries

C	D	E	F	G
76	60	47	33	20

Legend used in answers

Green Box - Working out

5b means five times b
 $b = -3$ so $5 \times -3 = -15$

Red Box and ✓ - Answer

48 % ✓

Authors Note

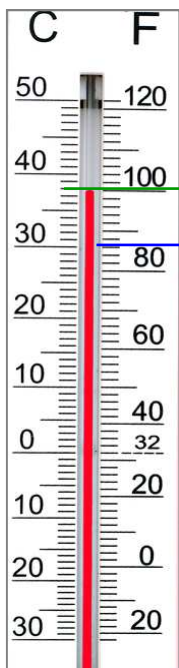
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This paper is dedicated to my grandson, Henry George Dew

1. The thermometer below has two scales – one for the temperature in degrees Centigrade (C) and one for degrees Fahrenheit (F)



a) What is the temperature reading shown, in degrees Centigrade?

37 to 38 degrees ✓

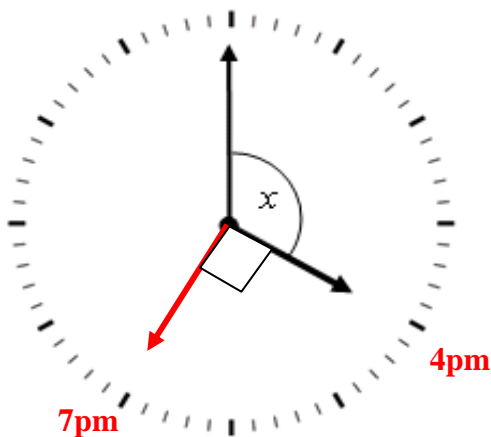
(1)

b) Use the scale to find an estimate of 30 degrees Centigrade in degrees Fahrenheit

85 to 87 degrees ✓

(1)

2. A clock face is shown below with a time of 4:00pm



a) Use a protractor to measure the angle x

120 degrees ✓

(1)

b) What type of angle is x ?

Obtuse ✓

(1)

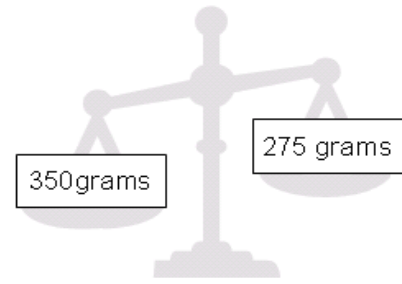
Clock Face

c) Draw **7pm** on the clock face.
How many degrees has the **hour hand** moved by?

90 degrees ✓

(1)

3. The scale shown is out of balance.



a) How many grams do you need to add to one side of the scales to get them to balance?

$$350 - 275 = 75 \text{ grams}$$

(1)

b) What is 2500 grams in kilograms

$$2500 \div 1000 = 2.5 \text{ kg}$$

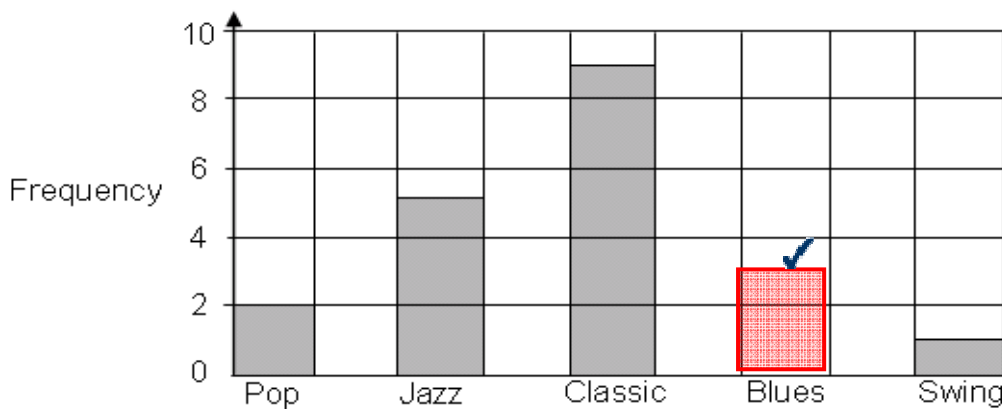
(1)

c) What is 1.2 metres in centimetres

$$1.2 \times 100 = 120 \text{ cm}$$

(1)

4. David recorded how many different types of CDs he had. He plotted the information on the bar chart below.



a) How many Classic CDs did he have?

9 classic cds

(1)

b) David had three Blues CDs. Complete the bar chart with this information

(1)

c) How many CDs did David have altogether?

$$2 + 5 + 9 + 3 + 1 = 20 \text{ cds}$$

(1)

5. a) Write 21365 in words

Twenty one thousand, three hundred and sixty five

(1)

- b) What is 21365 to the nearest hundred

21, 400

(1)

- c) What is the value of 1 in 21365

One thousand

(1)

6. a) Work out $\frac{4}{3} \times \frac{3}{2}$

Give your answer in its simplest form

$$\frac{12}{6} = 2$$

(1)

- b) Complete the missing values:

$$\frac{4}{5} = \frac{16}{20}$$

(1)

- c) Work out $\frac{3}{10} - \frac{1}{5}$

Give your answer in its simplest form

$$\frac{3}{10} - \frac{2}{10} = \frac{1}{10}$$

(2)

7. Estimate the value of $\frac{15 \times 9.8}{5.1}$

$$\frac{15 \times 10}{5} = \frac{150}{5} = 30$$

30

(3)

8. Look at the list of numbers below:

4 5 6 7 8 9 10

a) Which numbers in the list are prime numbers.

5, 7

(1)

b) What is the median?

Median = Middle number = 7

(1)

c) Which number is a factor of 21?

7 goes into 21 so it is a factor

7

(1)

d) What is the mean?

$$\begin{aligned} & (4 + 5 + 6 + 7 + 8 + 9 + 10) \div 7 \\ & = 49 \div 7 = 7 \end{aligned}$$

7

(2)

e) Which numbers are square numbers?

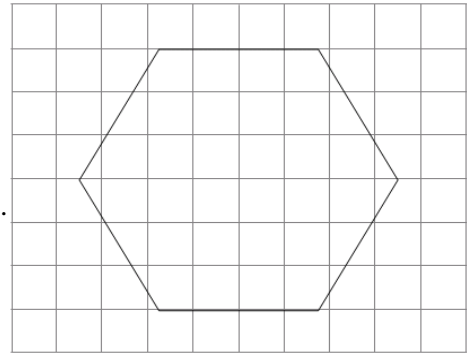
4 and 9

(1)

9. A shape is shown here.

a) What is the name of the shape?

..... **hexagon** ✓



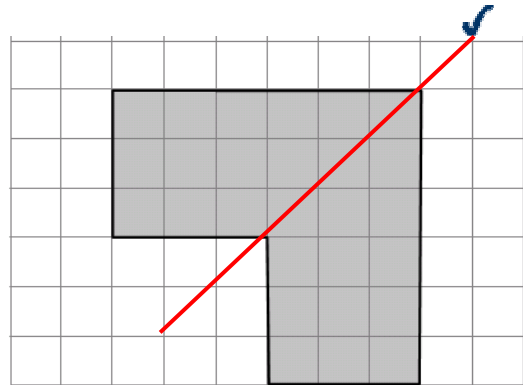
(1)

b) What is the order of rotational symmetry of the shape?

..... **6** ✓

(1)

Another shape is shown here on a **centimetre** grid



(1)

c) Draw a line of symmetry on the shape

d) Work out the area of the shape. What are the units?

Count the squares

..... **27 cm²** ✓

(2)

e) Work out the perimeter of the shape

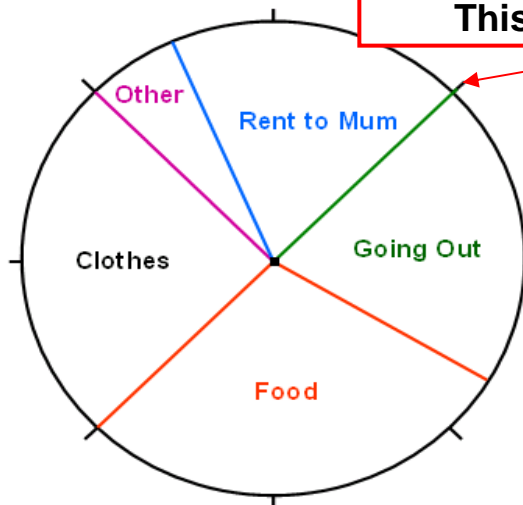
Go around the outside

..... **24** ✓ .cm

(1)

10. In 1980, a woman earned £40 each week

The pie chart shows how she spent her money.



These marks show $\frac{1}{8}$ ^{ths}
This division = £5

(a) How much did the woman spend on clothes each week?

One quarter of £40 = £10

£..... **10** (1)

b) Estimate how much rent she paid to her Mum?

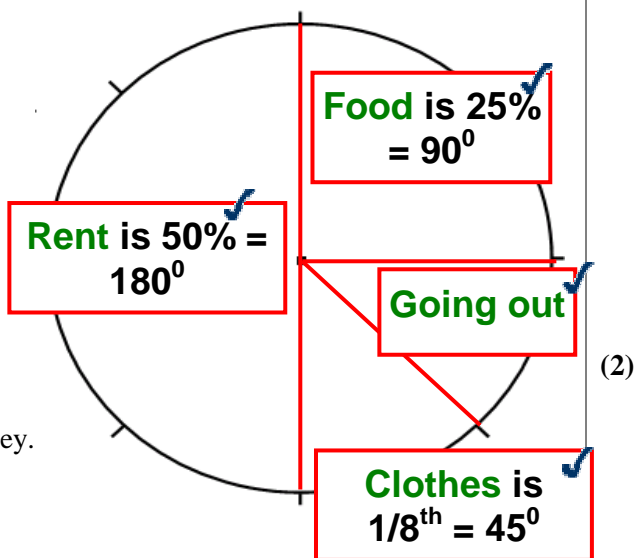
One eighth of £40 = £5
and a $\frac{1}{16}$ th of £40 = £2.50

£..... **7.50** (1)

In 2005, a woman earned £240 each week.

The table shows how she spent her money.

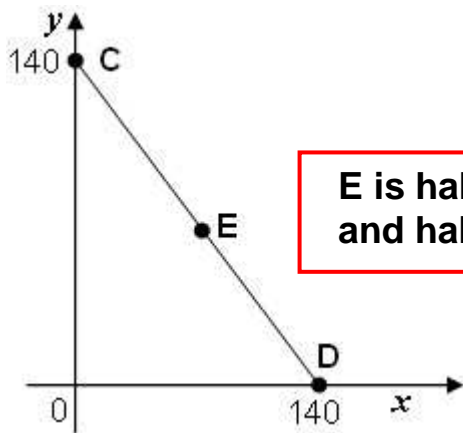
Rent	£120
Food	£60
Clothes	£30
Going out	£30



c) Complete the pie chart opposite to show how the woman spent her money.

Remember to **label** each sector of the pie chart.

11.



(a) E is the midpoint of line CD.

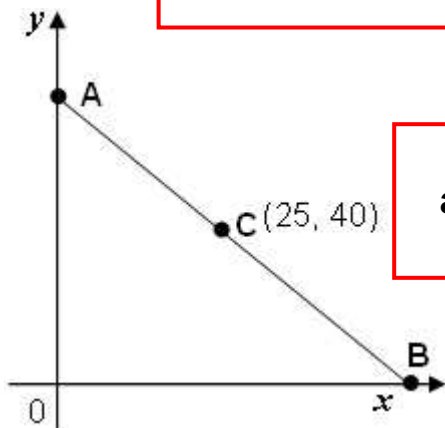
What are the coordinates of point E?

E is (**70 , 70** ..)

(1)

(b) C is the midpoint of line AB.

**A is nothing along the x axis = 0
and twice as far as C along the y = 80**



**B is twice as far as C along the x
axis = 50 and nothing along the y
axis**

The coordinates of C are (25, 40)

What are the coordinates of points A and B?

A is (.. **0 , 80** ..)

(1)

B is (.. **50 , 0** ..)

(1)

12. Outside a school, the speed of passing cars was recorded.

The speed of 17 cars is shown below.

14 17 20 25 31 40 17 21 27
 32 33 18 24 28 24 29 24

a) Draw an ordered stem and leaf diagram to show this information
 Remember to include a key.

1	4, 7, 7, 8
2	0, 1, 4, 4, 4, 5, 7, 8, 9
3	1, 2, 3,
4	0,

key $1 \mid 8 = 18$ (3)

b) What is the median speed?

**Median is middle one – the 9th
 one from either end**

..... **24** (1)

13. Write these numbers in order of size.
Start with the largest positive number.

a) 0.71 0.079 0.709 0.78 0.09

0.78 0.71 0.709 0.09 0.079 ✓

(1)

b) -3 -4 2 0 -1

2 0 -1 -3 -4 ✓

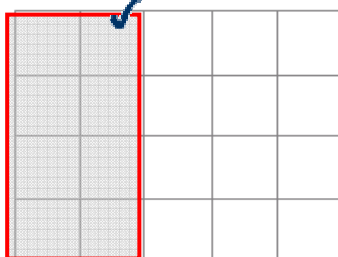
(1)

c) $\frac{2}{5}$ $\frac{7}{10}$ $\frac{2}{6}$ $\frac{4}{5}$

$\frac{4}{5}$ $\frac{7}{10}$ $\frac{2}{5}$ $\frac{2}{6}$ ✓

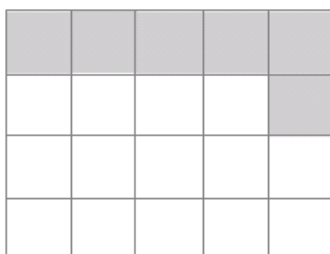
(1)

14. a) Shade $\frac{2}{5}$ of this grid



(1)

b) A shaded grid is shown below.
What fraction of this grid is shaded? Make your fraction as simple as possible.

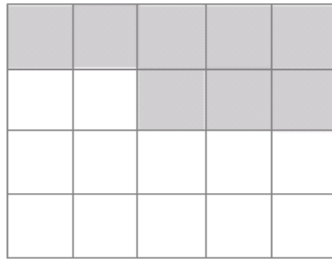


6 out of 20 = $\frac{6}{20}$ = $\frac{3}{10}$

$\frac{3}{10}$ ✓

(1)

- c) Another shaded grid is shown below.
What percentage of the grid is shaded?



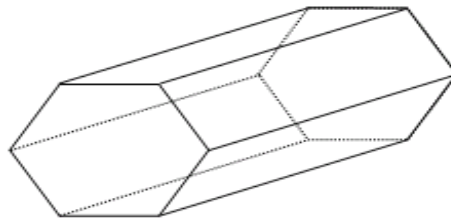
8 out of 20

$$\frac{8}{20} = \frac{40}{100}$$

40%

(1)

15. Look at this diagram showing a 3-D shape.



- a) How many faces does the shape have?

2 ends + 6 sides

8

(1)

- b) How many vertices does it have

Vertices = corners

12

(1)

16. Work out:

a) $4 \times 5 - 3$

$20 - 3 = 17$

(1)

b) $11 - 5 \times 2$

$11 - 10 = 1$

(1)

c) $3 \times (5 - 1)$

$3 \times 4 = 12$

(1)

d) $2 \times (5 - 1)^2$

$2 \times 4^2 = 2 \times 16 = 32$

(1)

17. The X31 bus time table is shown below

Toddington	07 10	08 05	09 08
Houghton Regis	07 17	08 12	09 15
Dunstable	07 30	08 25	09 28
L&D hospital	07 43	08 43	09 44
Luton	07 56	08 57	09 57

- a) Jane needs to get to the L&D hospital for a 08:55 appointment.
What is the **latest** time she can get a bus from Toddington?

8:05 ✓

(1)

- b) How long in minutes will Jane be on the bus?

8:05 to 8:43 = 38 minutes ✓

(2)

- c) Laura wants to go shopping in Luton and lives in Houghton Regis.
She arrives at the bus stop at 08:08.

- i) How long will she have to wait for the next bus?

Next bus at 8:12 = 4 minute wait ✓

(1)

- ii) What time will she arrive in Luton

8:12 arrives in Luton at 8:57 ✓

(1)

18.

On the grid, draw the graphs of

$$x = -2$$

(1)

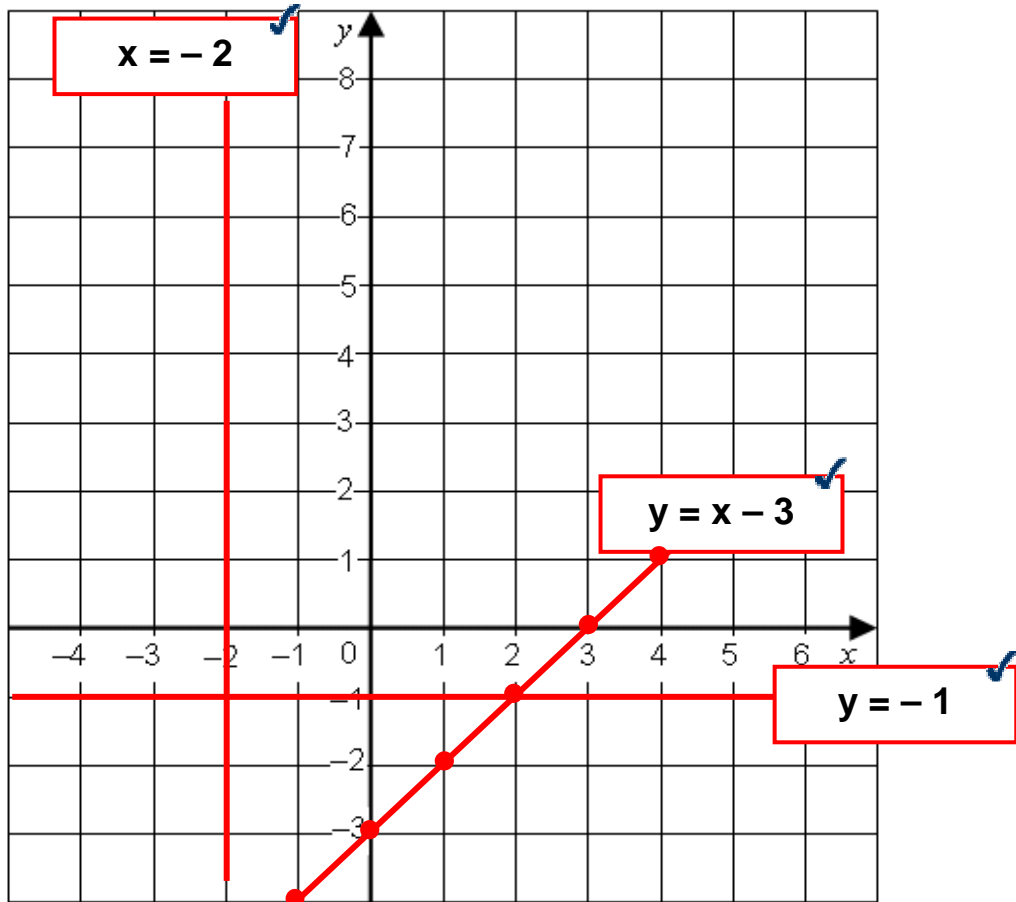
$$y = -1$$

(1)

$$y = x - 3 \quad \text{for } x \text{ from } -1 \text{ to } 4$$

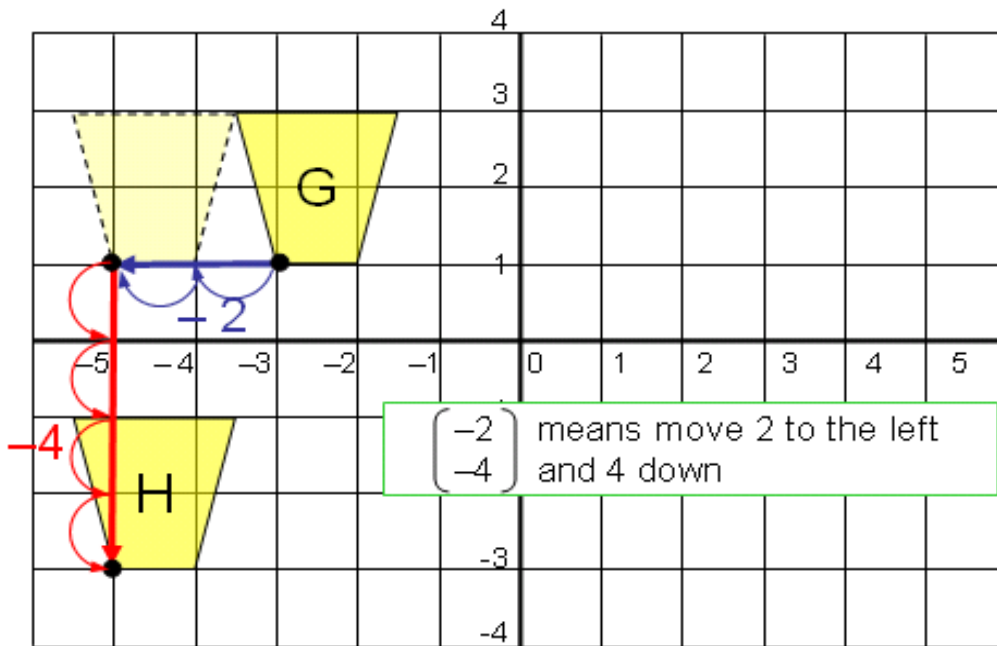
(3)

$x = -1$	0	1	2	3	4
$y = -4$	-3	-2	-1	0	1



19.

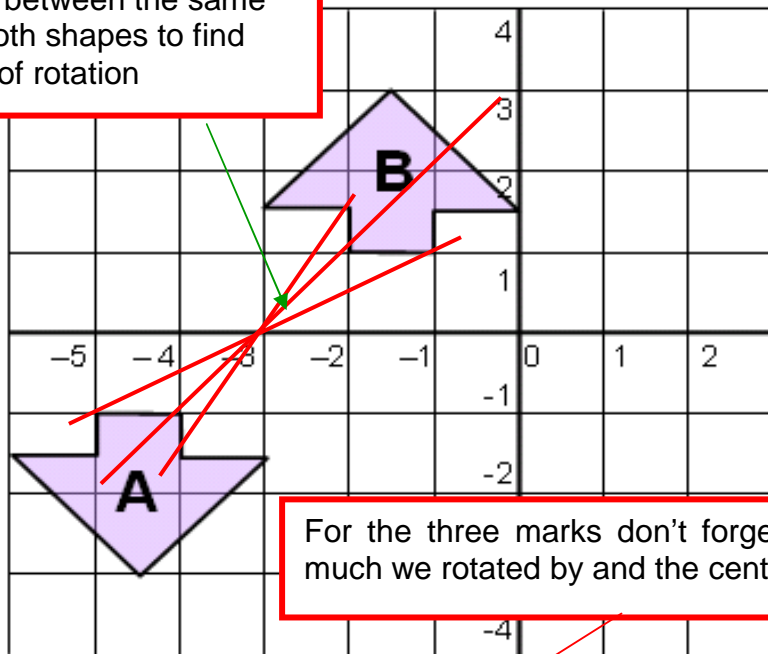
- a) Translate shape G by the vector $\begin{pmatrix} -2 \\ -4 \end{pmatrix}$ Label the new shape H.



(1)

- b) Fully describe the single transformation which takes shape A to shape B

Draw lines between the same points in both shapes to find the centre of rotation



For the three marks don't forget to say how much we rotated by and the centre of rotation

This looks like a ROTATION by 180 degrees about the point $(-3, 0)$

(3)

20. a) The n th term of a sequence is $7n + 3$

What is the 6th term of this sequence?

6th term means $n = 6$ so $7 \times 6 + 3 = 45$

45 ✓

(1)

- b) Look at these numbers

4 7 10 13

Write down the expression for the n th term of the sequence

**We jump 3 each time so write $3n$
Then we need to add 1 to make first term 4**

$3n + 1$ ✓

(2)

21. Whilst in Switzerland Matthew bought a snowboard.

The normal price was 560 Swiss Francs (CHF), but he got it in a sale with 15% off.

How much did Matthew pay for the snowboard?



560 10% = CHF 56

5% = CHF 28

CHF 84

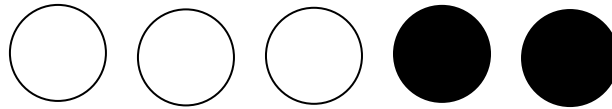
560 - 84 = CHF 476

476 ✓

CHF.....

(3)

22. a) Cyril puts 3 white counters and 2 black counters in a bag.



He is going to take one counter without looking.

What is the **probability** that the counter will be **white**?

3 out of 5 or 3/5

(1)

- b) Cyril puts the counter back in the bag and then puts more white counters in the bag.

He is going to take one counter without looking.

The **probability** that the counter will be **black** is now $\frac{1}{4}$

How many more white counters did Cyril put in the bag?

	White	Black	probability of black
start	3	2	2 out of 3
Add 1	4	2	2 out of 6 or 1 out of 3
Add 2	5	2	2 out of 7
Add 3	6	2	2 out of 8 or 1 out of 4

3

(2)

23. Work out:

$$243 \times 57$$

Split the 57 into tens and units:
50 and 7

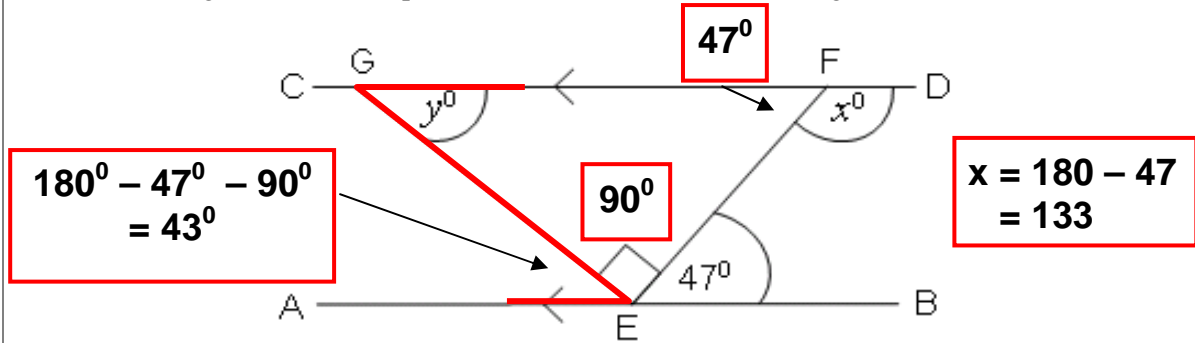
Split the 243 into hundreds,
tens and units:
200 40 and 3

	50	7	
200	10000	1400	11400
40	2000	280	2280
3	150	21	171
			13851

13,851

(2)

24. The diagram shows two parallel lines AB and CD and a triangle EFG.

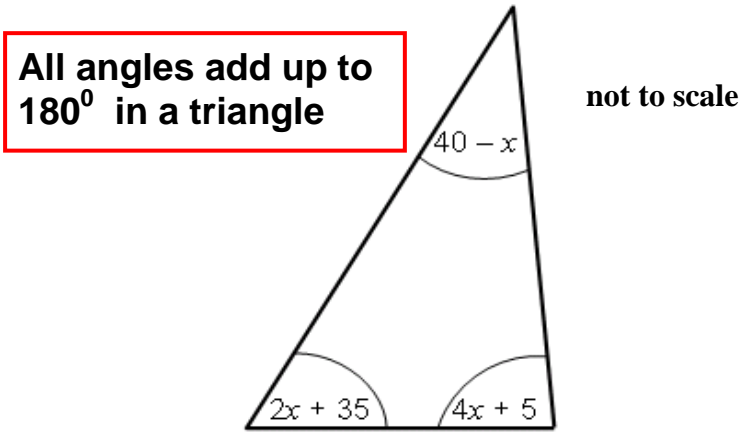


Work out the sizes of angles x and y

$x = \dots$ **133**° (1)

$y = \dots$ **43**° (1)

25. Three angles are shown in the triangle below.



a) Write an equation for the sum of the total angles in the triangle in terms of x .

$$2x + 35 + 4x + 5 + 40 - x = 180$$

$$5x + 80 = 180$$

5x + 80 = 180 (2)

b) Solve the equation to find x

$$5x + 80 = 180 \text{ so } 5x = 100 \text{ so } x = 20$$

$x = \dots$ **20**° (2)

c) What is the size of the largest angle in the triangle.

$$4 \times 20 + 5$$

largest angle = **85**° (1)

26. a) Work out $1\frac{4}{7} + 2\frac{2}{3}$

Add whole numbers: $1 + 2 = 3$

Give your answer as a fraction in its simplest form.

Add fractions: $\frac{4}{7} + \frac{2}{3} = \frac{12}{21} + \frac{14}{21} = \frac{26}{21} = 1\frac{5}{21}$

$4\frac{5}{21}$ ✓ (2)

b) Work out $\frac{3}{5} \div \frac{3}{10}$

Give your answer as a fraction in its simplest form

Calculation is same as

$\frac{3}{5} \times \frac{10}{3} = \frac{10}{5}$

2 ✓ (2)

27. a) Find the values of x in $6x - 5 = 19$

$$6x = 19 + 5 = 24$$

$x =$

4 ✓

(2)

b) Simplify $8x + 3q - 6x - 4q$

$$2x - q$$

(1)

c) Simplify $10x^2 - 7x^2$

$$3x^2$$

(1)

d) Factorise $4t - 20$

$$4(t - 5)$$

(1)

$$y^2 - 5y$$

$$y(y - 5)$$

(1)

e) Expand and simplify $4(x + 2y) + 3(4x - y)$

$$\text{Expand: } 4x + 8y + 12x - 3y$$

$$16x + 5y$$

(2)