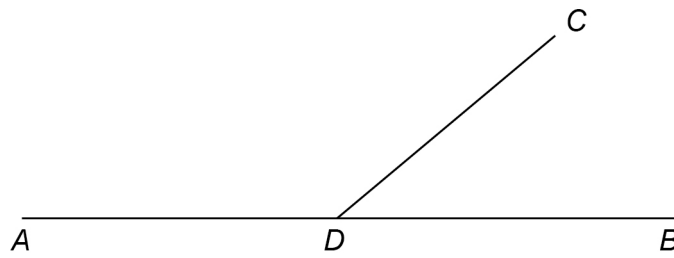


- 1 ADB and CD are straight lines.



Not drawn
accurately

angle $ADC = 5 \times$ angle CDB

Work out the size of angle ADC .

[3 marks]

Answer _____ degrees

2 (a) In a field

number of sheep : number of cows = 10 : 3

Zak says,

“There are 10 sheep in the field.”

Give a reason why Zak **could** be wrong.

[1 mark]

2 (b) In a different field

number of goats : number of pigs = 13 : 4

Priya says,

“There are more than three times as many goats as pigs.”

Is she correct?

Tick **one** box.

☐

Yes

☐

No

☐

Cannot tell

Show working to support your answer.

[1 mark]

3 In a **right-angled** triangle

smallest angle : largest angle = 2 : 5

Work out the three angles of the triangle.

[4 marks]

_____ degrees

_____ degrees

_____ degrees

4 Three teams, A, B and C, play in a competition.

games won by A : games won by B = 2 : 1

games won by B : games won by C = 3 : 1

Team B has won 6 games.

In total, how many games have the three teams won?

[3 marks]

Answer _____

5

$$a : b = 7 : 1$$

Circle the correct equation.

[1 mark]

$$a = 7b$$

$$b = 7a$$

$$a = 6b$$

$$b = 6a$$

6

Work out

cube root of 512 : reciprocal of 0.4

Give your answer in the form $n : 1$ **[3 marks]**

Answer _____ :

7

A password has 30 characters.

It is made up of 5 numbers, 15 letters and some symbols.

Work out the ratio numbers : letters : symbols

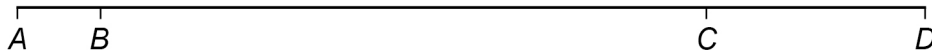
Give your answer in its simplest form.

[2 marks]

Answer _____ : _____ : _____

8 A , B , C and D are junctions on a motorway.

Not drawn
accurately



distance $CD = 3 \times$ distance AB

distance $BC = 25$ miles

Salma drives from A to C .

She drives for 30 minutes at an average speed of 62 miles per hour.

Work out the distance AD .

[4 marks]

Answer _____ miles

9

Some buttons are red or blue in the ratio red : blue = 3 : 5

What fraction of the buttons are red?

Circle your answer.

[1 mark]

$$\frac{2}{5}$$

$$\frac{3}{5}$$

$$\frac{3}{8}$$

$$\frac{5}{8}$$

10

Harry and his sister Jess have some money in the ratio Harry : Jess = 1 : 4

Harry has £7.35

They pay £16.99 for a present for a friend.

Harry uses $\frac{1}{3}$ of his money.

Jess pays the rest.

How much money does Jess have left?

[4 marks]

Answer £ _____

11 Jeff and Kaz share £270 in the ratio Jeff : Kaz = 2.6 : 1

How much **more** than Kaz does Jeff get?

[3 marks]

Answer £ _____

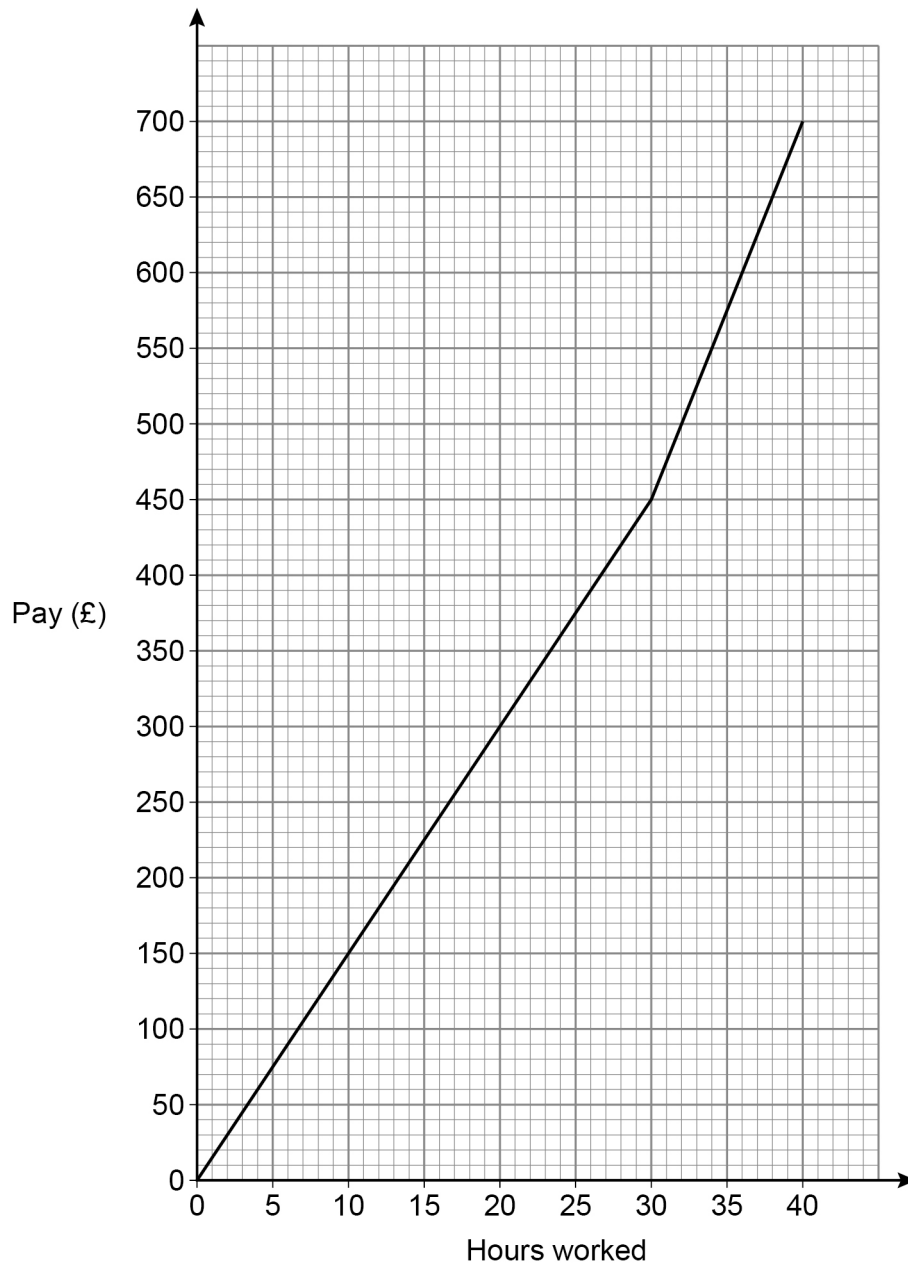
12

In a week, Samir is paid

a basic hourly rate for the first 30 hours worked

an overtime hourly rate for any extra hours worked.

The graph shows his pay for working up to 40 hours in a week.



Work out the ratio basic hourly rate : overtime hourly rate

Give your answer in its simplest form.

[3 marks]

Answer _____ : _____

13 $x : y$ is $9 : 5$

Circle the value of $\frac{2x}{y}$

[1 mark]

$$\frac{5}{18}$$

$$\frac{18}{5}$$

$$\frac{9}{10}$$

$$\frac{10}{9}$$

- 14 (a)** The people at a party are either adults or children.

$$\text{adults : children} = 9 : 11$$

What percentage are adults?

[2 marks]

Answer _____ %

- 14 (b)** The people at a different party are from Spain, France or Germany.

68% are from Spain

number from France = number from Germany

Work out number from Spain : number from France

Give your answer in the form $n : 1$

[3 marks]

Answer _____ : 1

15

In a bag,

number of green discs : number of blue discs = 20 : 11

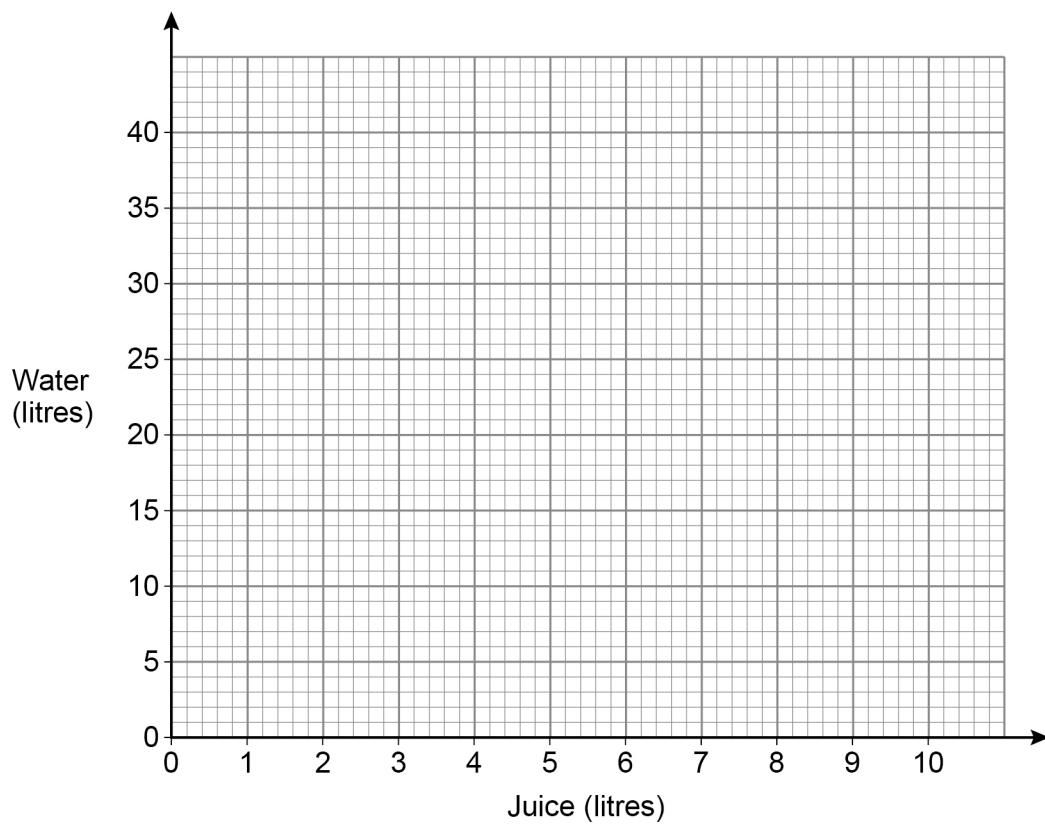
Tick **one** box for each statement about the discs in the bag.**[2 marks]**

	True	False	Cannot tell
There are more green discs than blue discs.	☐	☐	☐
In total there are 31 discs.	☐	☐	☐

16 Juice and water are mixed together in the ratio 2 : 7

16 (a) Draw a straight line graph that shows the amounts of juice and water to mix together.
Your graph **must** show up to 10 litres of juice.

[2 marks]



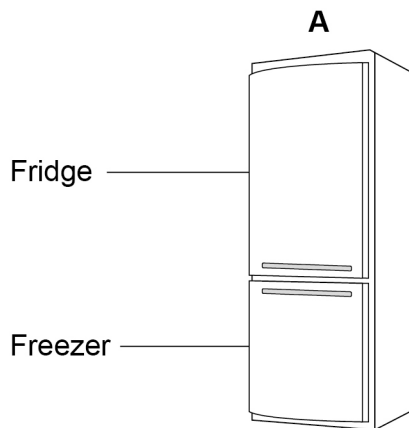
16 (b) How much water needs to be mixed with 5 litres of juice?

[1 mark]

Answer _____ litres

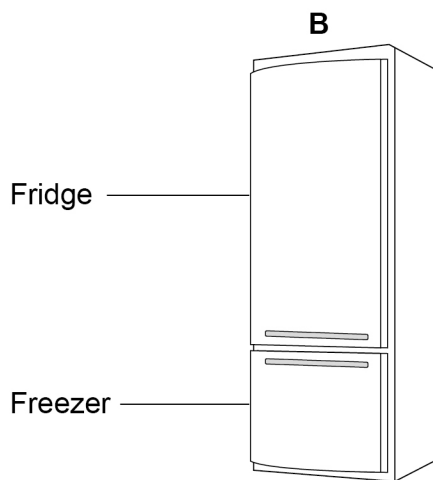
17

Information about two fridge-freezers, A and B, is shown.



Total capacity is 330 litres

fridge capacity : freezer capacity = 3 : 2



Fridge capacity is 294 litres

fridge capacity : freezer capacity = 7 : 3

Grace buys one of these fridge-freezers.

She buys the one with the greater **freezer** capacity.

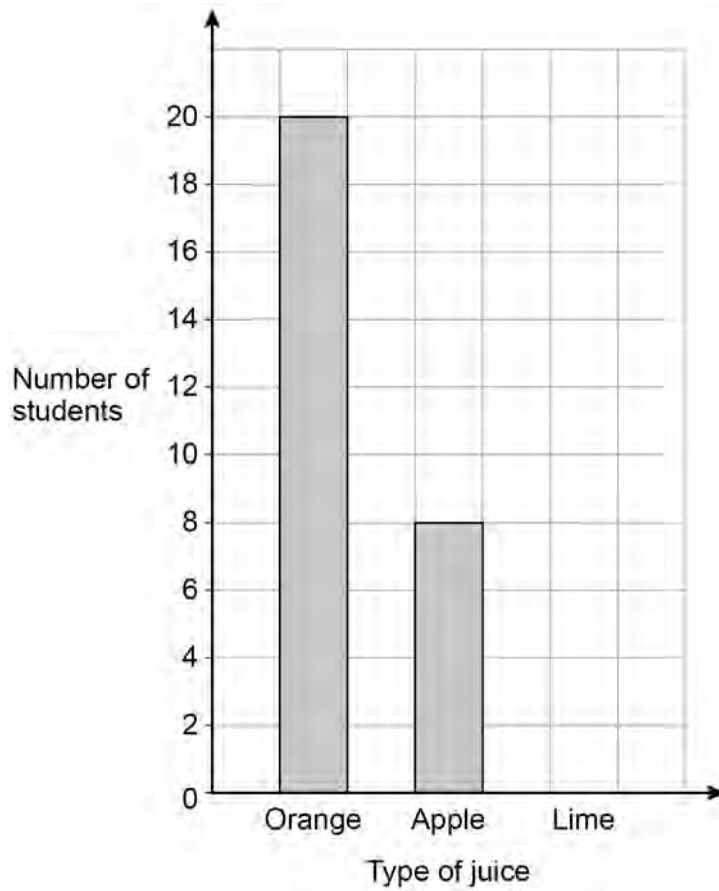
Which one does she buy?

You **must** show your working.

[4 marks]

Answer _____

- 18** Students choose juice with their school meal in the ratio
orange : apple : lime = 5 : 2 : 3



Complete the bar chart.

[3 marks]

L9 Andrew and Bruce share some money in the ratio 5 : 6

Bruce gets £96

Andrew gives $\frac{1}{4}$ of his share to Carl.

Bruce gives $\frac{2}{3}$ of his share to Carl.

How much money does Carl receive?

[4 marks]

Answer £ _____

20 (a) There are green pens and red pens in the box.

The ratio of green : red is 4 : 3

What fraction of the pens are green?

[1 mark]

Answer _____

21

Kai says that $3 : 2$ is an equivalent ratio to $9 : 6$

Jo says that $1.5 : 1$ is an equivalent ratio to $9 : 6$

Who is correct?

Tick **one** box.

☐

Both of them

☐

Kai only

☐

Jo only

☐

Neither of them

Give reasons for your answer.

[2 marks]

22

Jess saves 2p, 5p and 10p coins.

She has

- 45 10p coins
- 8 times as many 2p coins as **10p coins**
- £17.70 in total.

Work out total **value** of 2p coins : total **value** of 5p coins

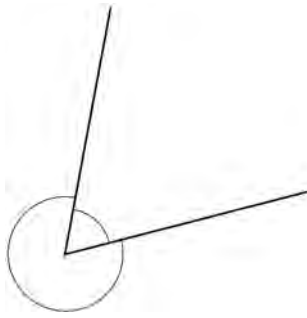
Give your answer in its simplest form.

[4 marks]

Answer _____ :

23

Two angles around a point are shown.

Not drawn
accuratelyThe angles are in the ratio $2 : 7$ Show that the larger angle is 280° **[2 marks]**

24

Jing has £2450

She saves some and gives the rest to her four brothers.

money saved : money given to brothers = 2 : 5

She gives each of her **four** brothers the **same** amount.

Does each brother receive more than £430 ?

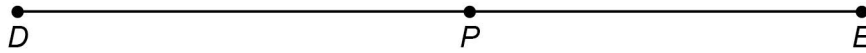
You **must** show your working.**[4 marks]**

- 25 (a)** A straight path between D and E passes through P .

$$DE = 200 \text{ metres}$$

P is 60 metres **closer** to E than to D .

Not drawn
accurately



Work out the ratio $DP : PE$

Give your answer in its simplest form.

[3 marks]

Answer _____ : _____

26 Divide 62 in the ratio 3 : 7 **[3 marks]**

Answer _____ and _____

- 27 Write $(3^6 \times 3^5) : 3^7$ in the form $n : 1$ where n is an integer. **[3 marks]**

Answer _____ : 1

- 28 a is 10% more than b .
Circle the ratio $a : b$ **[1 mark]**

10 : 11

10 : 1

11 : 10

1 : 10

- 29** On a train, there are between 60 and 70 people.
The ratio of adults to children is 5 : 4

Work out the **total** number of people on the train.

[2 marks]

Answer _____

30

Joe, Kim and Lisa each have an amount of money.

Joe has £72

Joe's amount : Kim's amount = 6 : 5

Lisa's amount is $1\frac{1}{2}$ times Joe's amount.

Show that, in total, they have **less** than £250

[3 marks]

31 Here are the results after 250 spins of a coin.

Heads	128
Tails	122

The coin is spun an extra 50 times.
After all 300 spins, the relative frequency of Heads is 0.49

For the **extra 50 spins**, work out number of Heads : number of Tails **[3 marks]**

Answer _____ : _____

32 (a) Two friends share £240 in the ratio 1 : 3

Work out the larger share.

[2 marks]

Answer £ _____

32 (b) A tennis player wins or loses matches in the ratio win : lose = 5 : 9

What fraction of the matches do they win?

[1 mark]

Answer _____

33

- A pack of pegs costs 40p
- A bar of soap costs £2.20
- A basket costs £7

Dan buys **two** packs of pegs, **one** bar of soap and **one** basket.

What fraction of the total cost is the cost of the basket?

[3 marks]

Answer _____

- 34 (a)** There are 30 students in a class.
12 of the students have school lunch.

Work out the ratio

students having school lunch : students not having school lunch

Give your answer in its simplest form.

[2 marks]

Answer _____ : _____

- 34 (b)** In a different class
students wearing glasses : students not wearing glasses = 3 : 8

What fraction of students in this class wear glasses?

[1 mark]

Answer _____

- 34 (c)** The ratio 4 : 9 is written in the form 1 : n

Work out the value of n .

[1 mark]

$n =$ _____