

Non-calculator Questions

Edexcel

1.

Ria works in a paint shop.
She needs to make 1500 ml of purple paint.

Ria makes purple paint by mixing red paint and blue paint and white paint in the ratio 3 : 2 : 1

How much blue paint does Ria need to make 1500 ml of purple paint?

(3)

ml

2.

Bill is a builder.

On Monday he made mortar mix.

He used 24 kg of sand and 5 kg of cement.

On Tuesday Bill will make the same type of mortar mix.

He will use 36 kg of sand.

How much cement does he need to make the same type of mortar mix?

(3)

kg

3.

Saima is making a filling for a cake.

Saima mixes jam, sugar and soft cheese in the ratio 4 : 1 : 16

She uses 32 oz of soft cheese.

Saima knows that 1 oz is 28.3 grams.

(a) How many grams of jam does Saima need?

(3)

 g

(b) Use estimation to show a check of your answer.

(1)

NCFE

4.

Joti and her friends knit squares to make patchwork blankets.

It takes 4 people 20 days to knit enough squares for one blanket.

How long would it take 8 people if they knit at the same rate?



[1 mark]

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Your answer:

days

7.

Eight bricklayers on a building site took 25 hours to build a wall.

The Site Manager needs a similar wall built.

He can hire five bricklayers to build this wall.

He needs to know how much longer it will take to build this wall.

How much **longer** will it take?

Show your working

_____ hours

(2 marks)

AQA

8.

Lisa makes fudge and sells it on a market stall.

Lisa makes fudge using these ingredients.

sugar	500	grams
butter	85	grams
evaporated milk	175	grams
milk	150	millilitres
flavouring	20	millilitres

This makes enough fudge for 4 boxes.

Lisa wants to make enough fudge for 48 boxes.

She already has 1.4 kilograms of sugar.

Sugar is sold in 1 kilogram bags.

How many bags of sugar does she need to buy?

[5 marks]

Answer _____

9.

Lisa sells the fudge in three flavours: strawberry, vanilla and mint.

She looks at the number of boxes of each flavour she has sold in the last few weeks.

Strawberry	60
Vanilla	140
Mint	40

This week, Lisa makes 48 boxes.

Using the data above, how many boxes of each flavour should she make?

You **must** show your working.

[4 marks]

Strawberry _____

Vanilla _____

Mint _____

Calculator Questions

Edexcel

1.

Sal works in a dress shop.

She wants to know how well the labels on the dress hangers agree with the true size of the dresses.

The table shows information about some hangers and dresses.

		True size of dress				
		10	12	14	16	18
Label on hanger	10	8	2	1	1	–
	12	–	9	3	1	2
	14	2	1	12	–	–
	16	1	–	1	13	2
	18	1	1	2	1	13
Totals		12	13	19	16	17

Sal thinks that 2 in every 7 dresses are on hangers with the wrong label.

Is Sal correct?

Show clearly why you think this.

(4)

2.

Andros has an oil fired heating system.

In a 30-day period he used a full tank of oil at a constant rate per day.

At a different time of the year the amount of oil Andros uses per day is $\frac{1}{3}$ of the rate used in the 30-day period.

(a) How many days should a full tank of oil last at this new rate?

(2)

days



(b) Use reverse calculation to show a check of your answer.

(1)

3.

Luke plays a computer game where he manages a city.
He buys two buildings.

Luke receives

- 135 coins every 8 hours from building A
- 36 coins every 15 minutes from building B.

Luke thinks he receives a total of 4000 coins in 24 hours from these buildings.

Is Luke correct?
Show why you think this.

(3)

4.

Sasha is the manager at a factory.

Last weekend 15 employees assembled 390 identical wardrobes.

Sasha wants 1200 of these wardrobes to be assembled next weekend.

How many employees does Sasha need next weekend?
You **must** show your working.

(3)

employees

5.

Jamal owns a car paint repair business.
He has 375 ml of thinner.

Jamal has plenty of colour and hardener
He has to mix colour, hardener and thinner in the ratio 2 : 1 : 10 to make car paint.

Work out the maximum amount of car paint Jamal can make with 375 ml of thinner.

(3)

ml

NCFE

6.

Sonya reads an article about the 5 : 3 : 2 rule.

The rule says you should spend your wages after tax in the ratio 5 : 3 : 2 on **needs : wants : savings**

- **needs** are bills like rent that must be paid
- **wants** are extra things like social life and new clothes which are not needed
- **savings** are amounts of money kept for the future.

Sonya earns £480 a week after tax.

Last week she spent £185 on going out with friends.

Was this in line with the 5 : 3 : 2 rule?

Show how you decide.

[2 marks]

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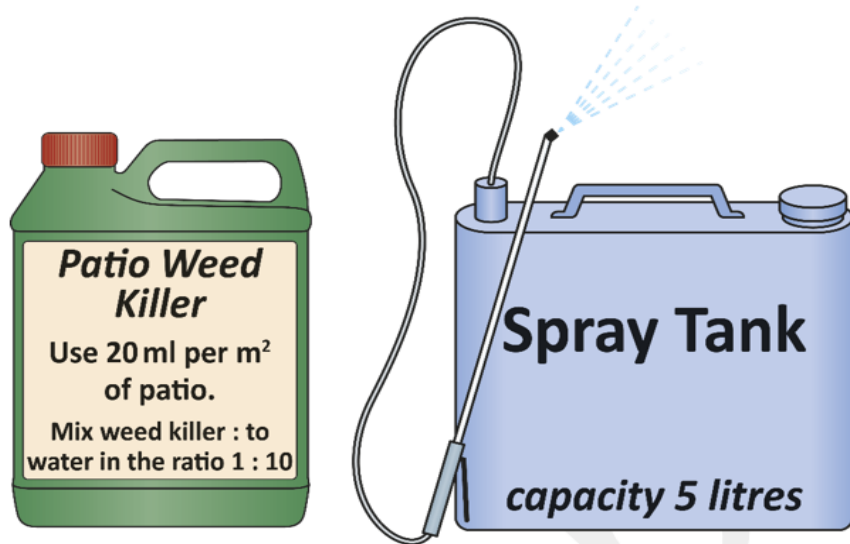
Your answer:

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7.

Dan needs to make a mixture of weed killer and water to clean Mr Patel's patio.

The area of the patio to be sprayed is 63.2 m^2



He fills the spray tank with the weed killer and water mixture.

How many times does Dan need to fill the spray tank to cover the whole patio?

[3 marks]

A large empty rectangular box for writing the answer.

Your answer:

A small empty rectangular box for writing the numerical answer.

8.

The company also prints t-shirts.

$\frac{2}{11}$ of the t-shirts are white.

$\frac{1}{3}$ of the remaining t-shirts are black.

What is the ratio of white : black t-shirts?

[2 marks]

Your answer:

9.

Screen images are made up of units of light called pixels.

Pixels per square inch (PPI²) is a measure of image quality.

The higher the pixels per square inch, the better the image quality.

$$\text{PPI}^2 = \frac{N}{A}$$

Where: N is the number of pixels

A is the area of the screen in square inches

Liam's old screen has a PPI² value of 9800

He wants to buy a new screen with a better image quality.

Liam sees a rectangular screen that has:

- a width of 101.6 cm
- width : height ratio of 16 : 9
- 8.28 million pixels

He works out that this will have a better image quality than his old screen.

Is Liam correct? Show your working.

Use the conversion: 1 inch = 2.54 cm

[4 marks]

Your answer:

10. a)

Pete makes a smoothie using juice from pineapples and mangoes.

He wants the volume of pineapple juice to mango juice to be as close as possible to a 3 : 2 ratio.

Typical volumes of juice produced from 1 fruit are:

Pineapple	0.2 litres
Mango	0.08 litres

Costs of fruit at the local supermarket are:

Type of fruit	Price for 1 fruit
Pineapple	£1.50
Mango	65p

What is the cost of the fruit that Pete needs to buy to make 8 litres of smoothie?

[5 marks]

Your answer:

£

b)

When Pete goes to buy the fruit, he finds that pineapples have increased in price to £1.75 each.

By what percentage has the price of pineapples increased?
Give your answer to 1 decimal place.

[2 marks]

Blank area for working out the answer.

Your answer:

%

11.

Alice lives in Oldcastle.

She is on a Community Policing course.

The ratio of solved to unsolved crimes in Oldcastle is 2 : 9

$\frac{1}{8}$ of crimes are solved in the whole of the UK.

Alice thinks that a greater proportion of crimes are solved in Oldcastle than in the rest of the UK.

Is she correct?

Show how you decide.

[3 marks]

PAST PAPER

Your answer:

12.

Sam asks friends and family to sponsor him for a 10 km run.

A local business offers to donate 25p for every £10 that Sam raises.

In total, Sam raised £2634.25

This included the money that the business donated.

How much did the business donate to Sam?

[3 marks]

Blank area for working out the answer, overlaid with a large diagonal watermark reading "PAST PAPER".

Your answer:

£

13.

CHAD are sending a letter to supporters.

They have asked for volunteers to put the letters into envelopes.

Eight people volunteer to help.

Each person works at the same rate.

It takes them 480 minutes to complete the task.

How many minutes would the task have taken 12 people, if each person worked at the same rate?

[2 marks]

<p>STOP PAPER</p>	
Your answer:	minutes

14.

Mel is an apprentice in a college admissions office.

She is organising interviews for new applicants.

The ratio of interviewers to applicants each day should be no higher than 2 : 15

There are 5 interviewers available on Monday.

What is the maximum number of applicants Mel should invite on Monday?

[2 marks]

ST PAPER

Your answer:

15.

The conversion rate is the proportion of all applicants who go on to enrol on a course.

This proportion is expressed as a decimal.

Mel needs to compare the conversion rates for this year and last year.

Mel has this information about enrolments this year:

- all applicants: 7680
- applicants who enrolled on a course: 4167

Last year, 6 out of every 11 applicants enrolled on a course.

Is the conversion rate this year lower than the conversion rate last year?

Show how you decide.

[2 marks]

Blank area for working out the answer.

Your answer:

Blank box for the final answer.

City & Guilds

16.

A man is going to New York for work. He wants to book a hotel online.

A friend says

'Remember the booking website will show the price in dollars. It will actually cost **more pounds** than the price shown, because of the exchange rate.'

The man checks the exchange rate because he thinks his friend is wrong. He thinks that the number of pounds will be **less** than the number of dollars shown.

Exchange rate **£1 = \$1.24**

Who is right, the man or his friend?
Explain your answer.

Explanation


(1 mark)

17.

A student wants to raise £100 for charity.
He will sell hot dogs at a disco.
He will make 150 hot dogs.
He buys ingredients at *The Supermarket*

The Supermarket

Hot dog sausages tin of 8	50p
Hot dog buns packet of 6	90p



If he sells all the hot dogs, what is the minimum price he must charge to make a profit of £100?

Show all your working

Blank area for showing working.

Minimum price per hot dog

(4 marks)

18.

A cook needs to cook a turkey to be ready by 6pm.

The cook will start cooking the turkey at 1:30pm

Turkey needs to be cooked for 45 minutes per kg of total weight plus 20 minutes and then left to rest for 45 minutes.

The cook has a 4.4kg turkey.

Has the cook allowed enough time? Explain your answer using figures.

Show your working

Has the cook allowed enough time? (*tick one box*) Yes No

Explanation

(4 marks)

19.

A cafe makes its own coffee blend by mixing different coffee beans together.

It uses Brazilian beans and Kenyan beans in a ratio of 4:1

The manager needs to mix enough beans to make **120 cups of coffee**.

Each cup of coffee needs 85g of beans.

He needs to know what weights of beans to use.

What are the weights of the beans he needs?

Show your working



Brazilian beans  kg

Kenyan beans  kg

(4 marks)

20.

A woman is going to Spain for a holiday.

She wants to book a hotel online.

She finds a hotel that charges €84 euros per night.

She thinks this will be about £100 per night.

Exchange rate pound to euro £1 = €1.12

Is she right? Explain your answer.

Is she right? (*tick one box*) Yes No

Explanation

(1 mark)

21.

An apprentice hairdresser needs to prepare a solution to colour a client's hair.

The client wants high lift shades.

The apprentice hairdresser measures out 75ml of developer.

Hair shade	Ratio of hair colour to developer
Grey coverage and fashion shades	1 : 1
High lift shades	1 : 1.5
Hair lightener	1 : 2

What amount of hair colour should she measure out?

Show your working

_____ ml

(2 marks)

22.

You are working out how much it will cost to pay a team of builders to complete a new project.

You know that:

- 6 builders will work on the project
- each builder normally works 8 hours per day
- each builder is paid £12 per hour
- the project will take 42 working days to complete

You agree to pay the 6 builders extra money (overtime) to complete the project sooner, in 35 working days. Overtime is paid at the rate of £18 per hour for each hour worked after the first 8 hours per day.

How much more will it cost to pay the builders to complete the work in 35 working days rather than 42 working days?

Show your working out and write the answer in the box below.

(6 marks)

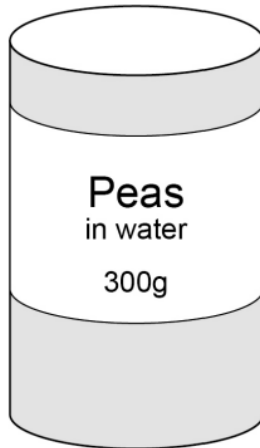
Answer: £ _____

AQA

23.

A company makes tinned food.

A tin is filled with peas and water.



The contents of the tin have a total mass of 300 grams.

mass of peas : mass of water = 3 : 2

240 of these tins are packed into a box.

Work out the total mass of peas in the box.

Give your answer in kilograms.

[5 marks]

Answer _____ kilograms

24.

Mo makes some pendants.

The glass in each pendant is red, blue or yellow.

$\frac{2}{11}$ of the pendants are red

blue pendants and yellow pendants are in the ratio 2 : 1

What fraction of the pendants are blue?

[4 marks]

Answer _____

27.

Write the ratio $144 : 90$ in its simplest form.

[2 marks]

Answer _____ : _____

29.

Pluto needs to eat 420 grams of food each day, in the ratio

$$\text{wet food} : \text{dry food} = 2 : 5$$

Ben buys a 12 kilogram bag of **dry** food.

How many days of **dry** food does the bag provide?

[4 marks]

Answer _____ days

30.

Molly wants to build a brick wall as part of the conservatory.

It would take Molly 12 hours to build the wall by herself.

Molly pays 2 builders to work with her to build the wall.

Molly pays each builder £14.73 per hour.

How much will Molly pay each builder for their work?

Assume that Molly and the builders work at the same rate.

[3 marks]

Answer £ _____