

CALCULATION PROBLEMS

Pearson Edexcel – Monday 8 June 2020 - Paper 3 (Calculator) Higher Tier

1.

4 Maisie knows that she needs 3 kg of grass seed to make a rectangular lawn 5 m by 9 m.

Grass seed is sold in 2 kg boxes.

Maisie wants to make a rectangular lawn 10 m by 14 m.

She has 5 boxes of grass seed.

(a) Has Maisie got enough grass seed to make a lawn 10 m by 14 m?
You must show all your working.

(4)

Maisie opens the 5 boxes of grass seed.

She finds that 4 of the boxes contain 2 kg of grass seed.
The other box contains 1 kg of grass seed.

(b) Does this affect whether Maisie has enough grass seed to make her lawn?
Give a reason for your answer.

.....

.....

.....

(1)

(Total for Question 4 is 5 marks)

Pearson Edexcel - Tuesday 21 May 2019 - Paper 1 (Non-Calculator) Higher Tier

2.

2 Deon needs 50 g of sugar to make 15 biscuits.

She also needs

three times as much flour as sugar
two times as much butter as sugar

Deon is going to make 60 biscuits.

(a) Work out the amount of flour she needs.

..... g
(3)

Deon has to buy all the butter she needs to make 60 biscuits.
She buys the butter in 250 g packs.

(b) How many packs of butter does Deon need to buy?

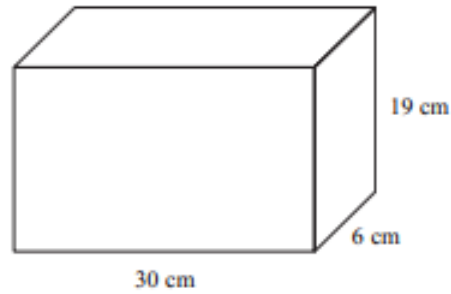
.....
(2)

.....
(Total for Question 2 is 5 marks)
.....

Pearson Edexcel - Thursday 6 June 2019 - Paper 2 (Calculator) Higher Tier

3.

- 4 A container is in the shape of a cuboid.



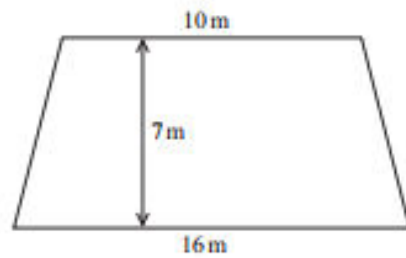
The container is $\frac{2}{3}$ full of water.

A cup holds 275 ml of water.

What is the greatest number of cups that can be completely filled with water from the container?

(Total for Question 4 is 4 marks)

5 The diagram shows a floor in the shape of a trapezium.



John is going to paint the floor.

Each 5 litre tin of paint costs £16.99

1 litre of paint covers an area of 2 m^2

John has £160 to spend on paint.

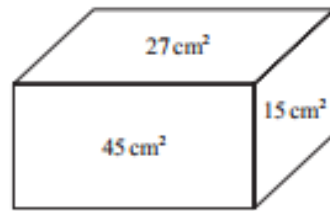
Has John got enough money to buy all the paint he needs?

You must show how you get your answer.

(Total for Question 5 is 5 marks)

8 The diagram shows a solid metal cuboid.

The areas of three of the faces are marked on the diagram.
The lengths, in cm, of the edges of the cuboid are whole numbers.



The metal cuboid is melted and made into cubes.
Each of the cubes has sides of length 2.5 cm.

Work out the greatest number of these cubes that can be made.

(Total for Question 8 is 5 marks)

- 14 There are 16 hockey teams in a league.
Each team played two matches against each of the other teams.
Work out the total number of matches played.

(Total for Question 14 is 2 marks)

Pearson Edexcel - Thursday 2 November 2017 - Paper 1 (Non-Calculator) Higher Tier

7.

- 9 James and Peter cycled along the same 50 km route.
James took $2\frac{1}{2}$ hours to cycle the 50 km.
Peter started to cycle 5 minutes after James started to cycle.
Peter caught up with James when they had both cycled 15 km.
James and Peter both cycled at constant speeds.
Work out Peter's speed.

..... km/h

(Total for Question 9 is 5 marks)

8.

- 13 A factory makes 450 pies every day.
The pies are chicken pies or steak pies.

Each day Milo takes a sample of 15 pies to check.

The proportion of the pies in his sample that are chicken is the same as the proportion of the pies made that day that are chicken.

On Monday Milo calculated that he needed exactly 4 chicken pies in his sample.

- (a) Work out the total number of chicken pies that were made on Monday.

(2)

On Tuesday, the number of steak pies Milo needs in his sample is 6 correct to the nearest whole number.

Milo takes at random a pie from the 450 pies made on Tuesday.

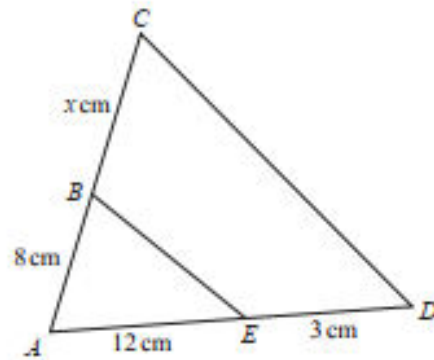
- (b) Work out the lower bound of the probability that the pie is a steak pie.

(2)

(Total for Question 13 is 4 marks)

9.

22 The two triangles in the diagram are similar.



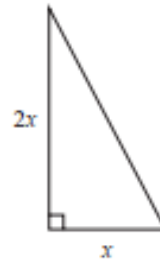
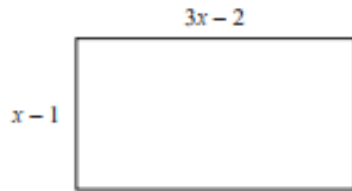
There are two possible values of x .

Work out each of these values.

State any assumptions you make in your working.

(Total for Question 22 is 5 marks)

23 Here is a rectangle and a right-angled triangle.



All measurements are in centimetres.

The area of the rectangle is greater than the area of the triangle.

Find the set of possible values of x .

(Total for Question 23 is 5 marks)

9 Yesterday it took 5 cleaners $4\frac{1}{2}$ hours to clean all the rooms in a hotel.

There are only 3 cleaners to clean all the rooms in the hotel today.

Each cleaner is paid £8.20 for each hour or part of an hour they work.

How much will each cleaner be paid today?

£

(Total for Question 9 is 3 marks)

Pearson Edexcel - Monday 6 November 2017 - Paper 2 (Calculator) Higher Tier

12.

18 At time $t = 0$ hours a tank is full of water.

Water leaks from the tank.

At the end of every hour there is 2% less water in the tank than at the start of the hour.

The volume of water, in litres, in the tank at time t hours is V_t

Given that

$$\begin{aligned} V_0 &= 2000 \\ V_{t+1} &= kV_t \end{aligned}$$

write down the value of k .

$k =$

(Total for Question 18 is 1 mark)

Pearson Edexcel - Wednesday 8 November 2017 - Paper 3 (Calculator) Higher Tier

13.

16 The petrol consumption of a car, in litres per 100 kilometres, is given by the formula

$$\text{Petrol consumption} = \frac{100 \times \text{Number of litres of petrol used}}{\text{Number of kilometres travelled}}$$

Nathan's car travelled 148 kilometres, correct to 3 significant figures.
The car used 11.8 litres of petrol, correct to 3 significant figures.

Nathan says,

“My car used less than 8 litres of petrol per 100 kilometres.”

Could Nathan be wrong?

You must show how you get your answer.

(Total for Question 16 is 3 marks)

Pearson Edexcel - Thursday 25 May 2017 - Paper 1 (Non-Calculator) Higher Tier

14.

9 Jules buys a washing machine.

20% VAT is added to the price of the washing machine.
Jules then has to pay a total of £600

What is the price of the washing machine with no VAT added?

£.....

(Total for Question 9 is 2 marks)

Pearson Edexcel - Thursday 25 May 2017 - Paper 1 (Non-Calculator) Higher Tier

15.

13 The table shows a set of values for x and y .

x	1	2	3	4
y	9	$2\frac{1}{4}$	1	$\frac{9}{16}$

y is inversely proportional to the square of x .

(a) Find an equation for y in terms of x .

.....
(2)

(b) Find the positive value of x when $y = 16$

.....
(2)

(Total for Question 13 is 4 marks)

16.

- 4 Olly drove 56 km from Liverpool to Manchester.
He then drove 61 km from Manchester to Sheffield.

Olly's average speed from Liverpool to Manchester was 70 km/h.
Olly took 75 minutes to drive from Manchester to Sheffield.

- (a) Work out Olly's average speed for his total drive from Liverpool to Sheffield.

..... km/h
(4)

Janie drove from Barnsley to York.

Janie's average speed from Barnsley to Leeds was 80 km/h.
Her average speed from Leeds to York was 60 km/h.

Janie says that the average speed from Barnsley to York can be found by working out the mean of 80 km/h and 60 km/h.

- (b) If Janie is correct, what does this tell you about the two parts of Janie's journey?

.....
.....
(1)

(Total for Question 4 is 5 marks)

17.

10 The table shows some information about eight planets.

Planet	Distance from Earth (km)	Mass (kg)
Earth	0	5.97×10^{24}
Jupiter	6.29×10^8	1.898×10^{27}
Mars	7.83×10^7	6.42×10^{23}
Mercury	9.17×10^7	3.302×10^{23}
Neptune	4.35×10^9	1.024×10^{26}
Saturn	1.28×10^9	5.68×10^{26}
Uranus	2.72×10^9	8.683×10^{25}
Venus	4.14×10^7	4.869×10^{24}

(a) Write down the name of the planet with the greatest mass.

.....
(1)

(b) Find the difference between the mass of Venus and the mass of Mercury.

..... kg

(1)

Nishat says that Neptune is over a hundred times further away from Earth than Venus is.

(c) Is Nishat right?

You must show how you get your answer.

(2)

.....
(Total for Question 10 is 4 marks)

- 4 Daniel bakes 420 cakes.
He bakes only vanilla cakes, banana cakes, lemon cakes and chocolate cakes.

$\frac{2}{7}$ of the cakes are vanilla cakes.

35% of the cakes are banana cakes.

The ratio of the number of lemon cakes to the number of chocolate cakes is 4:5

Work out the number of lemon cakes Daniel bakes.

(Total for Question 4 is 5 marks)

- 5 One sheet of A3 card has area $\frac{1}{8}$ m².
The card has a mass of 160 g per m².

Work out the total mass of 25 sheets of A3 card.

(Total for Question 5 is 4 marks)

Pearson Edexcel - Specimen Papers Set 2 - Paper 1 (Non-Calculator) Higher Tier

20.

- 7 A shop has a sale.

Microwave ovens

$\frac{1}{3}$ off normal price

Combination ovens

40% off normal price

A microwave oven has a sale price of £90

A combination oven has a sale price of £84

Which of these ovens has the greater normal price?

You must show all your working.

(Total for Question 7 is 4 marks)

Pearson Edexcel - Specimen Papers Set 2 - Paper 3 (Calculator) Higher Tier

21.

- 6 At a depth of x metres, the temperature of the water in an ocean is $T^\circ\text{C}$.
At depths below 900 metres, T is inversely proportional to x .

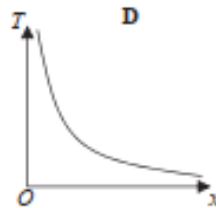
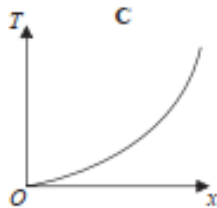
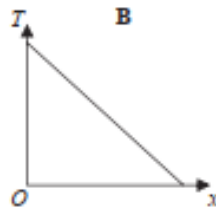
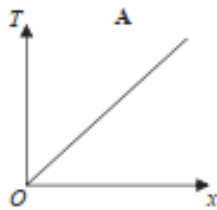
T is given by

$$T = \frac{4500}{x}$$

- (a) Work out the difference in the temperature of the water at a depth of 1200 metres and the temperature of the water at a depth of 2500 metres.

.....^{°C}
(3)

Here are four graphs.



One of the graphs could show that T is inversely proportional to x .

- (b) Write down the letter of this graph.

.....
(1)

(Total for Question 6 is 4 marks)

Pearson Edexcel - Specimen Papers Set 1 - Paper 1 (Non-Calculator) Higher Tier

22.

12 Sean drives from Manchester to Gretna Green.

He drives at an average speed of 50 mph for the first 3 hours of his journey.

He then has 150 miles to drive to get to Gretna Green.

Sean drives these 150 miles at an average speed of 30 mph.

Sean says,

“My average speed from Manchester to Gretna Green was 40 mph.”

Is Sean right?

You must show how you get your answer.

(Total for Question 12 is 4 marks)

Pearson Edexcel - Specimen Papers Set 1 - Paper 2 (Calculator) Higher Tier

23.

7 Becky has some marbles.

Chris has two times as many marbles as Becky.

Dan has seven more marbles than Chris.

They have a total of 57 marbles.

Dan says,

“If I give some marbles to Becky, each of us will have the same number of marbles.”

Is Dan correct?

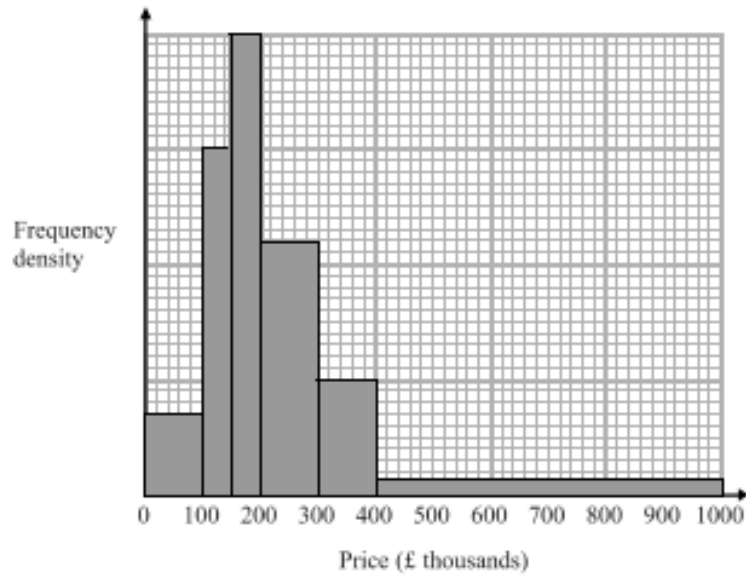
You must show how you get your answer.

(Total for Question 7 is 3 marks)

Pearson Edexcel - Specimen Papers Set 1 - Paper 2 (Calculator) Higher Tier

24.

16 The histogram gives information about house prices in a village in 2015



20 houses in the village have a price between £300 000 and £400 000

Work out the number of houses in the village with a price under £200 000

(Total for Question 16 is 3 marks)

Pearson Edexcel - Specimen Papers Set 1 - Paper 2 (Calculator) Higher Tier

25.

22 $D = \frac{x}{y}$

$x = 99.7$ correct to 1 decimal place.

$y = 67$ correct to 2 significant figures.

Work out an upper bound for D .

.....

(Total for Question 22 is 3 marks)

- 20** Mark has made a clay model.
He will now make a clay statue that is mathematically similar to the clay model.

The model has a base area of 6 cm^2

The statue will have a base area of 253.5 cm^2

Mark used 2 kg of clay to make the model.

Clay is sold in 10 kg bags.

Mark has to buy all the clay he needs to make the statue.

How many bags of clay will Mark need to buy?

(Total for Question 20 is 3 marks)

Pearson Edexcel - Sample Paper 1 - (Non-Calculator) Higher Tier

27.

7 There are 1200 students at a school.

Kate is helping to organise a party.
She is going to order pizza.

Kate takes a sample of 60 of the students at the school.
She asks each student to tell her **one** type of pizza they want.

The table shows information about her results.

Pizza	Number of students
ham	20
salami	15
vegetarian	8
margarita	17

Work out how much ham pizza Kate should order.

Write down any assumption you make **and** explain how this could affect your answer.

(Total for Question 7 is 3 marks)

4 Axel and Lethna are driving along a motorway.

They see a road sign.

The road sign shows the distance to Junction 8

It also shows the average time drivers take to get to Junction 8

To Junction 8 30 miles 26 minutes

The speed limit on the motorway is 70 mph.

Lethna says

“We will have to drive faster than the speed limit to drive 30 miles in 26 minutes.”

Is Lethna right?

You must show how you get your answer.

(Total for Question 4 is 3 marks)

5 Henry is thinking of having a water meter.

These are the two ways he can pay for the water he uses.

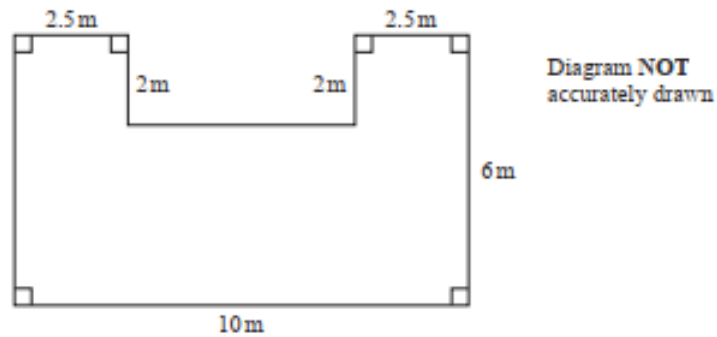
Water Meter	No Water Meter
A charge of £28.20 per year	A charge of £107 per year
plus	
91.22p for every cubic metre of water used	
1 cubic metre = 1000 litres	

Henry uses an average of 180 litres of water each day.

Use this information to determine whether or not Henry should have a water meter.

(Total for Question 5 is 5 marks)

*7 The diagram shows the plan of a floor.



Angie is going to varnish the floor.

She needs 1 litre of varnish for 5 m^2 of floor.

There are 2.5 litres of varnish in each tin of varnish.

Angie has 3 tins of varnish.

Does she have enough varnish for all the floor?

You must show all your working.

(Total for Question 7 is 5 marks)

*4 A shop sells bags of crisps in different size packs.

There are

18 bags of crisps in a small pack

20 bags of crisps in a medium pack

26 bags of crisps in a large pack



Which size pack is the best value for money?

You must show all your working.

(Total for Question 4 is 4 marks)

- 6 The body mass index, B , for a person of mass m kg and height h metres is given by the formula

$$B = \frac{m}{h^2}$$

Usman has a mass of 50 kg.
He has a height of 1.57 m.

- (a) Work out Usman's body mass index.
Give your answer correct to one decimal place.

.....
(2)

Tom's height is 1.80 m.
He wants his body mass index to be 21

- (b) Work out the mass that will give Tom a body mass index of 21

..... kg
(2)

Tom is a ski jumper.

The maximum length of skis he can use is 145% of his height.
Tom's height is 1.80 m.

- (c) Work out the maximum length of skis Tom can use.

..... m
(3)

.....
(Total for Question 6 is 7 marks)

- 11 Colin works on 5 days each week.
Each day he drives from his home to work and from work to his home.

Colin pays £3.50 each day to use the car park at work.

The distance from Colin's home to work is 18 miles.

Colin's car uses one gallon of petrol every 45.2 miles.

1 litre of petrol costs 136.9p

1 gallon = 4.546 litres

Work out the total cost for Colin to use his car for work each week.

You must show all your working.

£

(Total for Question 11 is 5 marks)

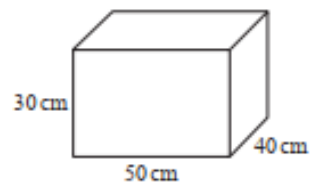
- *9 The diagram shows a container for oil.
The container is in the shape of a cuboid.
The container is empty.

Sally has to fill the container with oil.
A bottle of oil costs £3.50
There are 3000 cm³ of oil in each bottle.

Sally must **not** spend more than £60 buying the oil.

Can Sally buy enough oil to fill the container?
You must show all your working.

Diagram **NOT**
accurately drawn



(Total for Question 9 is 4 marks)

- 3 Ali is y years old.
Bhavara is twice as old as Ali.
Ceri is 3 years younger than Ali.
- The total of their ages is 125 years.
- Work out the age of each person.

Ali..... years

Bhavara..... years

Ceri..... years

(Total for Question 3 is 4 marks)

4 Tom is going to buy 25 plants to make a hedge.

Here is information about the cost of buying the plants.

Kirsty's Plants £2.39 each

Hedge World Pack of 25 £52.50 plus VAT at 20%
--

Tom wants to buy the 25 plants as cheaply as possible.

Should Tom buy the plants from Kirsty's Plants or from Hedge World?

You must show all your working.

(Total for Question 4 is 5 marks)

- *5 Redlands School sent x students to a revision day.
St Samuel's School sent twice as many students as Redlands School.
Francis Long School sent 7 fewer students than Redlands School.

Each student paid £15 for the revision day.
The students paid a total of £1155

Work out how many students were sent by each school to the revision day.
You must show all your working.

(Total for Question 5 is 5 marks)

Pearson Edexcel - Monday 8 June 2015 - Paper 2 (Calculator) Higher Tier

38.

- 21 Fred is making two rectangular flower beds.
The dimensions of the larger rectangle will be three times the dimensions of the smaller rectangle.

There is going to be the same depth of soil in each flower bed.
Fred needs 180 kg of soil for the smaller flower bed.

Work out how much soil Fred needs for the larger flower bed.

..... kg

(Total for Question 21 is 2 marks)

Pearson Edexcel - Monday 8 June 2015 - Paper 2 (Calculator) Higher Tier

39.

22 Claire is making a loaf of bread.

A loaf of bread loses 12% of its weight when it is baked.

Claire wants the baked loaf of bread to weigh 1.1 kg.

Work out the weight of the loaf of bread before it is baked.

..... kg

(Total for Question 22 is 3 marks)

Pearson Edexcel - Wednesday 5 November 2014 - Paper 1 (Non-Calculator) Higher Tier

40.

*6 Steve wants to put a hedge along one side of his garden.

He needs to buy 27 plants for the hedge.

Each plant costs £5.54

Steve has £150 to spend on plants for the hedge.

Does Steve have enough money to buy all the plants he needs?

(Total for Question 6 is 4 marks)

Pearson Edexcel - Wednesday 5 November 2014 - Paper 1 (Non-Calculator) Higher Tier

41.

- 11 Ria is going to buy a caravan.
The total cost of the caravan is £7000 plus VAT at 20%.
Ria pays a deposit of £3000
She pays the rest of the total cost in 6 equal monthly payments.
Work out the amount of each monthly payment.

£.....

(Total for Question 11 is 4 marks)

Pearson Edexcel - Wednesday 5 November 2014 - Paper 1 (Non-Calculator) Higher Tier

42.

- 14 Suha has a full 600 ml bottle of wallpaper remover.
She is going to mix some of the wallpaper remover with water.

Here is the information on the label of the bottle.

<p>Wallpaper remover 600 ml</p> <p>Mix $\frac{1}{4}$ of the wallpaper remover with 4500 ml of water</p>
--

Suha is going to use 750 ml of water.

How many millilitres of wallpaper remover should Suha use?
You must show your working.

..... ml

(Total for Question 14 is 4 marks)

1 Here are the ingredients needed to make 10 pancakes.

Pancakes	
Ingredients to make 10 pancakes	
300 ml	of milk
120 g	of flour
2	eggs

Matthew makes 30 pancakes.

(a) Work out how much flour he uses.

.....
(2)

Tara makes some pancakes.
She uses 750 ml of milk.

(b) Work out how many pancakes she makes.

.....
(2)

.....
(Total for Question 1 is 4 marks)

- 11 Saphia is organising a conference.
People at the conference will sit at circular tables.



Diagram **NOT**
accurately drawn

Each table has a diameter of 140 cm.
Each person needs 60 cm around the circumference of the table.

There are 12 of these tables in the conference room.
A total of 90 people will be at the conference.

Are there enough tables in the conference room?

(Total for Question 11 is 4 marks)

Pearson Edexcel - Monday 9 June 2014 - Paper 1 (Non-Calculator) Higher Tier

45.

4 Mr Brown and his 2 children are going to London by train.

An adult ticket costs £24

A child ticket costs £12

Mr Brown has a Family Railcard.

Family Railcard gives

$\frac{1}{3}$ off adult tickets

60% off child tickets

Work out the total cost of the tickets when Mr Brown uses his Family Railcard.

£.....

(Total for Question 4 is 4 marks)

Pearson Edexcel - Friday 13 June 2014 - Paper 2 (Calculator) Higher Tier

46.

11 Here is a plan of Martin's driveway.

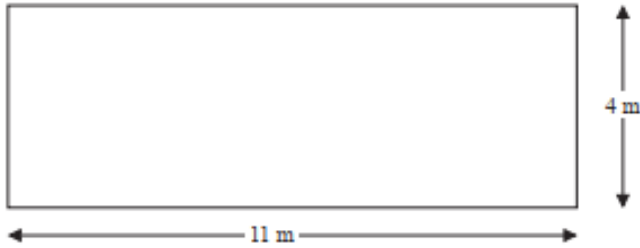


Diagram NOT
accurately drawn

Martin is going to cover his driveway with gravel.
The gravel will be 6 cm deep.

Gravel is sold in bags.
There are 0.4 m^3 of gravel in each bag.
Each bag of gravel costs £38

Martin gets a discount of 30% off the cost of the gravel.

Work out the total amount of money Martin pays for the gravel.

£.....

(Total for Question 11 is 5 marks)

1 This is a list of ingredients for making chicken soup for 4 people.

Ingredients for 4 people	
60 g	butter
300 g	chicken
150 ml	cream
1	onion
640 ml	chicken stock

Bill is going to make chicken soup for 6 people.

Work out the amount of each ingredient he needs.

- g butter
- g chicken
- ml cream
- onion
- ml chicken stock

(Total for Question 1 is 3 marks)

- 7 Rita is going to make some cheeseburgers for a party.
She buys some packets of cheese slices and some boxes of burgers.

There are 20 cheese slices in each packet.
There are 12 burgers in each box.

Rita buys exactly the same number of cheese slices and burgers.

- (i) How many packets of cheese slices and how many boxes of burgers does she buy?

..... packets of cheese slices

..... boxes of burgers

Rita wants to put one cheese slice and one burger into each bread roll.
She wants to use all the cheese slices and all the burgers.

- (ii) How many bread rolls does Rita need?

..... bread rolls

(Total for Question 7 is 4 marks)

- 6 There are 130 adults at a language school.
Each adult studies one of French or Spanish or German.

96 of the adults are women.
12 of the women study French.
73 of the adults study Spanish.
55 of the women study Spanish.
9 of the men study German.

How many of the adults study French?

(Total for Question 6 is 4 marks)

Pearson Edexcel - Friday 8 November 2013 - Paper 2 (Calculator) Higher Tier

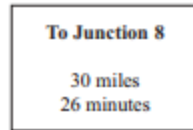
50.

13 Axel and Lethna are driving along a motorway.

They see a road sign.

The road sign shows the distance to Junction 8

It also shows the average time drivers will take to get to Junction 8



The speed limit on the motorway is 70 mph.

Lethna says,

'We will have to drive faster than the speed limit to go 30 miles in 26 minutes.'

Is Lethna right?

You must show how you got your answer.

(Total for Question 13 is 3 marks)

23 The table shows information about 1065 students.

	Male	Female
Year 7	126	109
Year 8	112	134
Year 9	121	114
Year 10	87	94
Year 11	88	80

Elena takes a stratified sample of 120 students by year group and by gender.

Work out the number of Year 8 female students in her sample.

(Total for Question 23 is 2 marks)

Pearson Edexcel - Tuesday 11 June 2013 - Paper 1 (Non-Calculator) Higher Tier

52.

*15 One sheet of paper is 9×10^{-2} cm thick.

Mark wants to put 500 sheets of paper into the paper tray of his printer.
The paper tray is 4 cm deep.

Is the paper tray deep enough for 500 sheets of paper?
You must explain your answer.

(Total for Question 15 is 3 marks)

53.

*2 Here is a list of ingredients for making 18 mince pies.

Ingredients for 18 mince pies

225 g of butter
350 g of flour
100 g of sugar
280 g of mincemeat
1 egg

Elaine wants to make 45 mince pies.

Elaine has

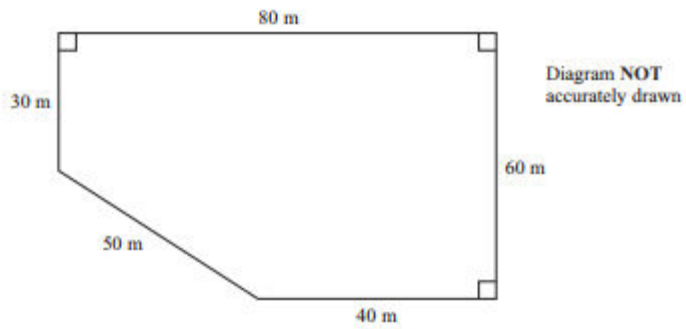
1 kg of butter
1 kg of flour
500 g of sugar
600 g of mincemeat
6 eggs

Does Elaine have enough of each ingredient to make 45 mince pies?
You must show clearly how you got your answer.

(Total for Question 2 is 4 marks)

54.

8 The diagram shows the plan of a playground.



Bill is going to cover the playground with tarmac.
It costs £2.56 to cover each square metre with tarmac.
Work out the total cost of the tarmac Bill needs.

£.....

(Total for Question 8 is 4 marks)

21 In Holborn School there are

460 students in Key Stage 3
320 students in Key Stage 4
165 students in Key Stage 5

Nimer is carrying out a survey.

He needs a sample of 100 students stratified by Key Stage.

Work out the number of students from Key Stage 3 there should be in the sample.

(Total for Question 21 is 2 marks)

Pearson Edexcel - Monday 4 March 2013 - Paper 2 (Calculator) Higher Tier

56.

*2 225 grams of flour are needed to make 9 cakes.

Marian wants to make 20 of these cakes.
She has 475 grams of flour.

Does Marian have enough flour to make 20 cakes?
You must show all your working.

(Total for Question 2 is 3 marks)

Pearson Edexcel - Monday 4 March 2013 - Paper 2 (Calculator) Higher Tier

57.

6 Mr Watkins needs to buy some oil for his central heating.

Mr Watkins can put up to 1500 litres of oil in his oil tank.

There are already 850 litres of oil in the tank.

Mr Watkins is going to fill the tank with oil.

The price of oil is 67.2p per litre.

Mr Watkins gets 5% off the price of the oil.

How much does Mr Watkins pay for the oil he needs to buy?

£.....

(Total for Question 6 is 5 marks)

Pearson Edexcel - Monday 4 March 2013 - Paper 2 (Calculator) Higher Tier

58.

23 The table shows information about the ages, in years, of 300 students.

Age (years)	11	12	13	14	15	16
Number of students	41	40	50	48	53	68

Ian takes a sample of 50 of these students, stratified by age.

Calculate the number of 16 year old students he should have in his sample.

(Total for Question 23 is 2 marks)

1 Here are the ingredients needed to make 16 gingerbread men.

Ingredients
to make **16** gingerbread men

180 g flour
40 g ginger
110 g butter
30 g sugar

Hamish wants to make 24 gingerbread men.

Work out how much of each of the ingredients he needs.

..... g flour

..... g ginger

..... g butter

..... g sugar

(Total for Question 1 is 3 marks)

3 Here is part of Gary's electricity bill.

Electricity bill	
New reading	7155 units
Old reading	7095 units
Price per unit 15p	

Work out how much Gary has to pay for the units of electricity he used.

(Total for Question 3 is 4 marks)

7 Here is a diagram of Jim's garden.

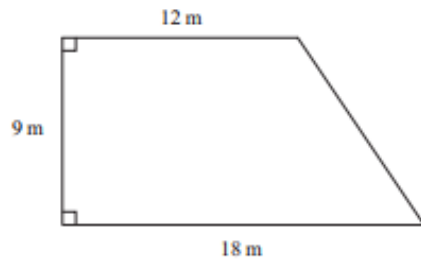


Diagram NOT
accurately drawn

Jim wants to cover his garden with grass seed to make a lawn.

Grass seed is sold in bags.

There is enough grass seed in each bag to cover 20 m^2 of garden.

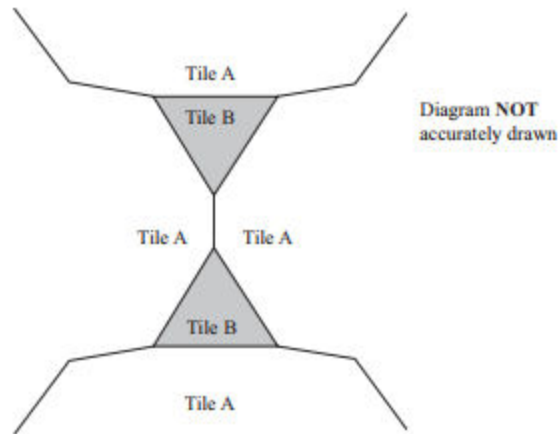
Each bag of grass seed costs £4.99

Work out the least cost of putting grass seed on Jim's garden.

£

(Total for Question 7 is 4 marks)

18 The diagram shows part of a pattern made from tiles.



The pattern is made from two types of tiles, tile A and tile B.

Both tile A and tile B are regular polygons.

Work out the number of sides tile A has.

(Total for Question 18 is 4 marks)

- 3 A company sells boxes to factories.
Fred buys boxes.
The boxes are sold in packs of 1000
Each pack costs £193.86

Fred orders 3 packs of boxes.
He gets a discount on his total order.

The table shows the discount he will get.

Total Order	Discount
£100 - £300	5%
£301 - £400	10%
£401 and above	15%

Work out the total cost of the order after the discount.
You must show your working.

(Total for Question 3 is 5 marks)

Pearson Edexcel - Thursday 8 November 2012 - Paper 2 (Calculator) Higher Tier

64.

- 7 160 cm of gold wire has a weight of 17.8 grams.

Work out the weight of 210 cm of the gold wire.

..... grams

(Total for Question 7 is 3 marks)

65.

- 2 The diagram shows a patio in the shape of a rectangle.

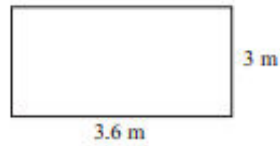


Diagram NOT
accurately drawn

The patio is 3.6 m long and 3 m wide.

Matthew is going to cover the patio with paving slabs.

Each paving slab is a square of side 60 cm.

Matthew buys 32 of the paving slabs.

- (a) Does Matthew buy enough paving slabs to cover the patio?
You must show all your working.

.....
(3)

The paving slabs cost £8.63 each.

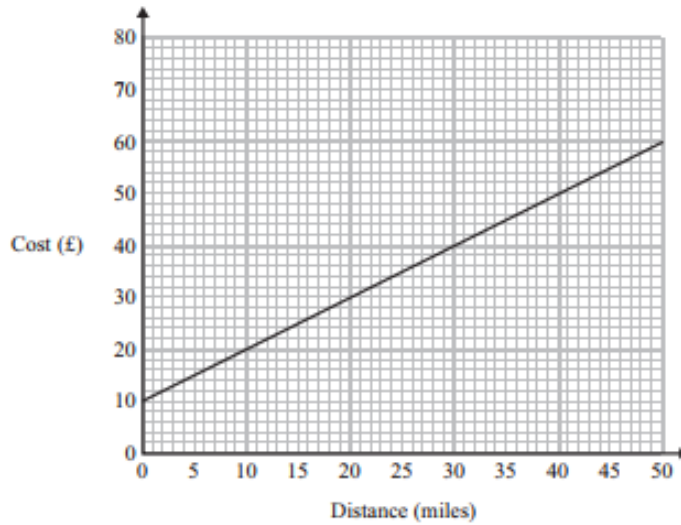
- (b) Work out the total cost of the 32 paving slabs.

£
(3)

.....
(Total for Question 2 is 6 marks)

66.

- *3 Bill uses his van to deliver parcels.
 For each parcel Bill delivers there is a fixed charge plus £1.00 for each mile.
 You can use the graph to find the total cost of having a parcel delivered by Bill.



- (a) How much is the fixed charge?

£
 (1)

Ed uses a van to deliver parcels.
 For each parcel Ed delivers it costs £1.50 for each mile.
 There is **no** fixed charge.

- (b) Compare the cost of having a parcel delivered by Bill with the cost of having a parcel delivered by Ed.

(3)

(Total for Question 3 is 4 marks)

6 Here are the ingredients needed to make 12 shortcakes.

Shortcakes	
Makes 12 shortcakes	
50 g	of sugar
200 g	of butter
200 g	of flour
10 ml	of milk

Liz makes some shortcakes.
She uses 25 ml of milk.

(a) How many shortcakes does Liz make?

.....
(2)

Robert has 500 g of sugar
 1000 g of butter
 1000 g of flour
 500 ml of milk

(b) Work out the greatest number of shortcakes Robert can make.

.....
(2)

.....
(Total for Question 6 is 4 marks)
.....

- 12 Jane has a carton of orange juice.
The carton is in the shape of a cuboid.

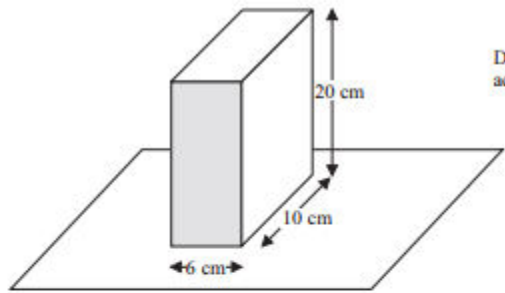


Diagram NOT
accurately drawn

The depth of the orange juice in the carton is 8 cm.

Jane closes the carton.

Then she turns the carton over so that it stands on the shaded face.

Work out the depth, in cm, of the orange juice now.

..... cm

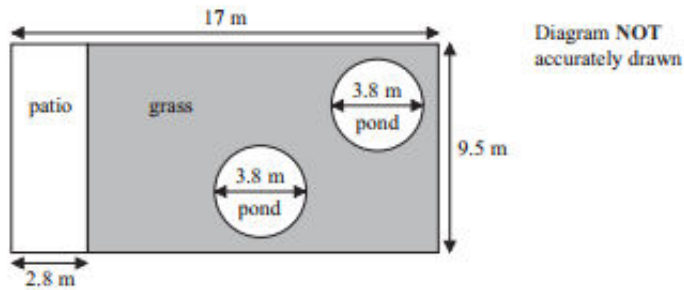
(Total for Question 12 is 3 marks)

*5 Mr Weaver's garden is in the shape of a rectangle.

In the garden

there is a patio in the shape of a rectangle
and two ponds in the shape of circles with diameter 3.8 m.

The rest of the garden is grass.



Mr Weaver is going to spread fertiliser over all the grass.
One box of fertiliser will cover 25 m^2 of grass.

How many boxes of fertiliser does Mr Weaver need?
You must show your working.

(Total for Question 5 is 5 marks)

- *6 Potatoes cost £9 for a 12.5 kg bag at a farm shop.
The same type of potatoes cost £1.83 for a 2.5 kg bag at a supermarket.

Where are the potatoes the better value, at the farm shop or at the supermarket?
You must show your working.

(Total for Question 6 is 4 marks)

*15 Henry is thinking about having a water meter.

These are the two ways he can pay for the water he uses.

Water Meter

A charge of £28.20 per year

plus

91.22p for every cubic metre of water used

1 cubic metre = 1000 litres

No Water Meter

A charge of £107 per year

Henry uses an average of 180 litres of water each day.

Henry wants to pay as little as possible for the water he uses.
Should Henry have a water meter?

(Total for Question 15 is 5 marks)

23 (a) Max wants to take a random sample of students from his year group.

(i) Explain what is meant by a random sample.

(ii) Describe a method Max could use to take his random sample.

(2)

(b) The table below shows the numbers of students in 5 year groups at a school.

Year	Number of students
9	239
10	257
11	248
12	190
13	206

Lisa takes a stratified sample of 100 students by year group.

Work out the number of students from Year 9 she has in her sample.

(2)

(Total for Question 23 is 4 marks)

3. Fred buys 18 tins of polish costing £2.37 each.

(a) Work out the total cost.

£.....
(3)

A vacuum cleaner costs £85

Fred gets 10% off the price of the vacuum cleaner.

(b) Work out how much he has to pay.

£.....
(3)

(Total 6 marks)

4. John needs 4 tyres for his car.

He pays for 3 tyres and gets one tyre free.
The tyres cost £65 each plus VAT at 20%.

Work out how much in total John pays for the tyres.



£

(Total 4 marks)

1. Here is a list of ingredients for making 10 Flapjacks.

<p>Ingredients for 10 Flapjacks</p> <p>80 g rolled oats</p> <p>60 g butter</p> <p>30 ml golden syrup</p> <p>36 g light brown sugar</p>

Work out the amount of each ingredient needed to make 15 Flapjacks.

- g rolled oats
- g butter
- ml golden syrup
- g light brown sugar

(Total 3 marks)

Pearson Edexcel - Monday 6 June 2011 - Paper 3 (Non-Calculator) Higher Tier

76.

6. Each exterior angle of a regular polygon is 30° .

Work out the number of sides of the polygon.

.....

(Total 2 marks)

Pearson Edexcel - Friday 10 June 2011 - Paper 4 (Calculator) Higher Tier

77.

16. In a sale the normal price of a book is reduced by 10%.
The sale price of the book is £4.86

Calculate the normal price of the book.

£.....

(Total 3 marks)

Pearson Edexcel - Friday 10 June 2011 - Paper 4 (Calculator) Higher Tier

78.

22. There are three secondary schools in Banley.
The table shows the number of students in each of these schools.

Adis College	Greslow High	Fripp School
750	700	900

Germaine takes a sample of 50 students stratified by school.

Work out the number of students from Greslow High in the sample.

.....
(Total 2 marks)

Pearson Edexcel - Tuesday 9 November 2010 - Paper 3 (Non-Calculator) Higher Tier

79.

7. Paul drives 175 miles to a meeting.
His company pays him 37p for each mile.

Work out how much the company pays Paul.

£

(Total 3 marks)

80.

11. Lizzie bought a van.
The total cost of the van was £6000 plus VAT at $17\frac{1}{2}\%$.



Lizzie paid £3000 when she got the van.
She paid the rest of the total cost of the van in 10 equal monthly payments.

Work out the amount of each monthly payment.

£

(Total 6 marks)

81.

25. The table shows information about the ages, in years, of 1000 teenagers.

Age (years)	13	14	15	16	17	18	19
Number of teenagers	158	180	165	141	131	115	110

Simone takes a sample of 50 of these teenagers, stratified by age.

Calculate the number of 14 year olds she should have in her sample.

.....
(Total 2 marks)

Pearson Edexcel - Friday 12 November 2010 - Paper 4 (Calculator) Higher Tier

82.

4. Here is a list of ingredients to make melon sorbet for 6 people.

Melon Sorbet for 6 people	
800 g	melon
4	egg whites
$\frac{1}{2}$	lime
100 g	caster sugar

Terry makes melon sorbet for 18 people.

(a) Work out how much caster sugar he uses.

..... g
(2)

Hedley makes melon sorbet.
He uses 2 limes.

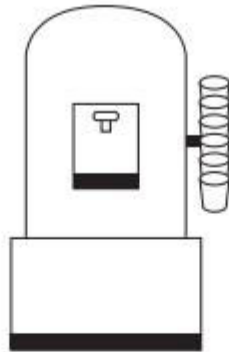
(b) Work out how many people he makes melon sorbet for.

.....
(2)

(Total 4 marks)

83.

18.



A water container has 19.5 litres of water in it.
A cup holds 210 ml of water.

At most 92 cups can be filled completely from the water container.
Explain why.
You must show all your working.

(Total 3 marks)

84.

1. Here is a list of ingredients for making a trifle for 4 people.

Trifle for 4 people	
120 g	of raspberry jelly
8	sponge fingers
420 m/	of custard
180 g	of tinned fruit

Rob is going to make a trifle for 6 people.
Work out the amount of each ingredient he needs.

..... g of raspberry jelly


..... sponge fingers

..... m/ of custard

..... g of tinned fruit

(Total 3 marks)

10. A computer costs £360 plus $17\frac{1}{2}\%$ VAT.
Calculate the total cost of the computer.

	£360 plus $17\frac{1}{2}\%$ VAT
---	---------------------------------------

£

(Total 3 marks)

Pearson Edexcel - Tuesday 10 November 2009 - Paper 4 (Calculator) Higher Tier

86.

21. In a sale, normal prices are reduced by 12%.
The sale price of a digital camera is £132.88

Work out the normal price of the digital camera.

£

(Total 3 marks)

Pearson Edexcel - Tuesday 10 November 2009 - Paper 4 (Calculator) Higher Tier

87.

24. The table below gives some information about some students in a school.

Year group	Boys	Girls	Total
Year 12	126	94	220
Year 13	77	85	162
Total	203	179	382

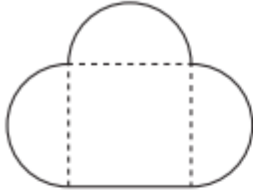
Andrew is going to carry out a survey of these students.
He uses a sample of 50 students, stratified by year group and gender.

Work out the number of Year 13 girls that should be in his sample.

.....
(Total 2 marks)

88.

- 10 The diagram shows Jane's lawn.
It is in the shape of a square of side 36m and three semi-circles.



Not to scale

She is going to spread fertiliser on the lawn at a rate of 30g per square metre.
The fertiliser is only sold in 10kg bags costing £15.80 each.

Calculate the cost of buying the bags of fertiliser for her lawn.
You must show all your working.

£ [6]

89.

4 Nina estimates the value of $\sqrt{\left(\frac{3.93 \times 393}{0.546 \times 220}\right)^3}$ by rounding each number to 1 significant figure.

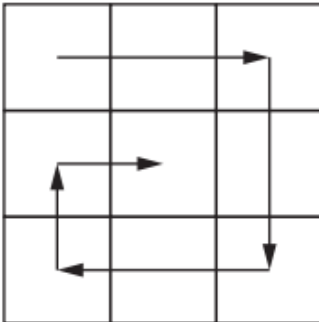
(a) Show that Nina's answer is 64. [3]

(b) Calculate the error in her estimated answer as a percentage of the exact answer.

(b) % [4]

90.

- 10 Nine consecutive numbers are written on a 3-by-3 grid. They are arranged, in ascending order, in a spiral as shown.



- (a) Karen writes the numbers 3 to 11 on her grid.

3	4	5
10	11	6
9	8	7

The total of the first column is $3 + 10 + 9 = 22$.

Karen says

The total of the first column is one less than the total of the second column.

Show that this is correct for Karen's grid.

[1]

(b) Victor says

If **any** nine consecutive numbers are arranged in ascending order in this spiral on a 3-by-3 grid, the total of the first column will **always** be one less than the total of the second column.

Prove that Victor is correct.

[5]

91.

3 Ed has a card shop.

(a) He buys a particular card for £1.20 and sells it for £1.68.

Calculate his percentage profit on this card.

(a) % [3]

(b) Ed's profit on "Good Luck" cards in 2018 was £360.
This was a decrease of 20% on his profit in 2017.

Work out Ed's profit on "Good Luck" cards in 2017.

(b) £ [3]

92.

- 1 A grain of salt weighs 6.48×10^{-5} kg on average.
A packet contains 0.35 kg of salt.

(a) Use this information to calculate the number of grains of salt in the packet.

(a) [2]

(b) Explain why your answer to part (a) is unlikely to be the actual number of grains of salt in the packet.

.....
.....
..... [1]

93.

6 A bag contains some counters.

- There are 300 counters in the bag.
- There are only red, white and blue counters in the bag.
- The probability of picking a blue counter is $\frac{23}{50}$.
- The ratio of red counters to white counters is 2 : 1.

Calculate the number of red counters in the bag.

..... [4]

94.

- 5 The depth of water in a garden pond is 57.8 cm.
The depth decreases by 0.3 cm per day.

(a) Assume the depth continues to decrease at the same rate.

After how many days will the depth reach 54.2 cm?

(a) days [3]

(b) If the depth of water decreases at a slower rate, what effect will this have on your answer to part (a)?

..... [1]

95.

- 16 A £1 coin weighs 8.75 g, correct to the nearest 0.01 g.
Mitul weighs the contents of a large bag of £1 coins.
The coins weigh 2.63 kg, correct to the nearest 10 g.

Mitul says

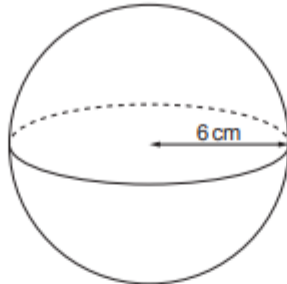
I am sure that the bag contains exactly £300 because, using bounds,
 $2625 \div 8.755 = 299.8$ to 1 decimal place.

Show that Mitul may not be correct.

.....
..... [3]

96.

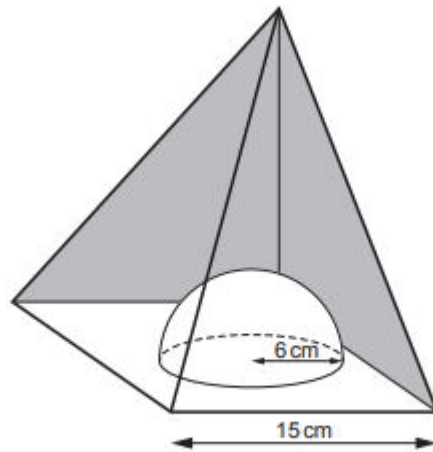
- 13 (a) Calculate the volume of a sphere with radius 6 cm.



[The volume V of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]

(a)cm³ [2]

- (b) An ornament is made from a solid glass square-based pyramid. The base has side length 15 cm. A hemisphere with radius 6 cm is cut out of the base of the pyramid. This reduces the volume of glass contained in the ornament by 30%.



Calculate the perpendicular height of the pyramid.

[The volume of a pyramid is $\frac{1}{3} \times \text{area of base} \times \text{perpendicular height}$.

A hemisphere is half a sphere.]

(b) cm [5]

OCR GSCE – Tuesday 6 November 2017 – Paper 5 (Non - Calculator) Higher Tier

97.

- 4 (a) Factorise.

$$x^2 - 43^2$$

(a) [1]

- (b) Calculate.

$$57^2 - 43^2$$

(b) [2]

OCR GSCE – Tuesday 13 June 2017 – Paper 6 (Calculator) Higher Tier

98.

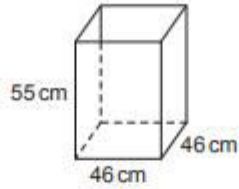
- 11 Sunil makes 7.5 litres of soup, correct to the nearest 0.5 litre.
He serves the soup in 300ml portions, correct to the nearest 10 ml.
24 people order this soup.

Does Sunil definitely have enough soup to serve the 24 people?
Show how you decide.

..... [4]

99.

- 18 Alvin has a crate in the shape of a cuboid.
The crate is open at the top.
The internal dimensions of the crate are 46 cm long by 46 cm wide by 55 cm high.



Alvin has a stick of length 95 cm.
Alvin places the stick in the crate so that the shortest possible length extends out above the top of the crate.

- (a) Calculate the length of the stick that extends out of the crate.

(a) cm [4]

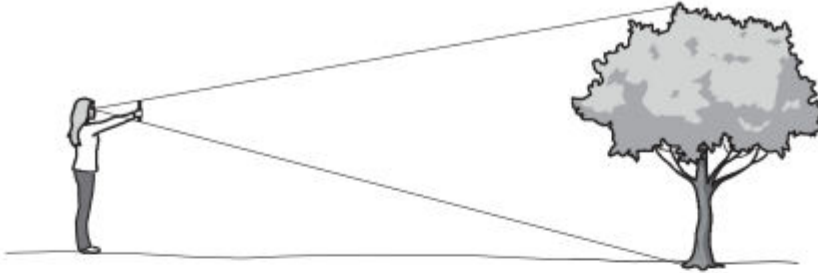
- (b) Calculate the angle the stick makes with the base of the crate.

(b) ° [3]

OCR GCSE – Sample Papers – Paper 4 (Calculator) Higher Tier

100.

- 9 (a) Anna estimates the height of a tree.



Anna holds a ruler vertically so the height of the tree is exactly covered by the ruler.
She is 20 metres from the tree.
The ruler is 30 cm long.
The horizontal distance from her eyes to the ruler is 60 cm.

Calculate an estimate of the height of the tree.

(a) m [3]

- (b) Give two reasons why this method may not be suitable to estimate the height of a very tall building.

1

2

[2]

101.

13 Ashraf is going to put boxes into a crate.

The crate is a cuboid measuring 2.5 m by 2 m by 1.2 m

Each box is a cube of length 50 cm

He does these calculations.

volume of crate	=	$2.5 \times 2 \times 1.2$
	=	6 m^3
volume of one box	=	$0.5 \times 0.5 \times 0.5$
	=	0.125 m^3
number of boxes	=	$6 \div 0.125$
	=	48

He claims,

“I can put 48 boxes in the crate.”

Evaluate Ashraf's method **and** claim.

[2 marks]

102.

6 The table shows information about the population of a city.

Population in 2001	Population in 2011
420 000	480 000

Liam claims,

“From 2011 to 2021 the population of the city will increase by the same percentage as from 2001 to 2011”

He works out,

$$\begin{aligned} \text{population increase from 2001 to 2011} &= 480\,000 - 420\,000 \\ &= 60\,000 \end{aligned}$$

$$\begin{aligned} \text{population in 2021} &= 480\,000 + 60\,000 \\ &= 540\,000 \end{aligned}$$

Does the population of 540 000 match his claim?

You **must** show your working.

[3 marks]

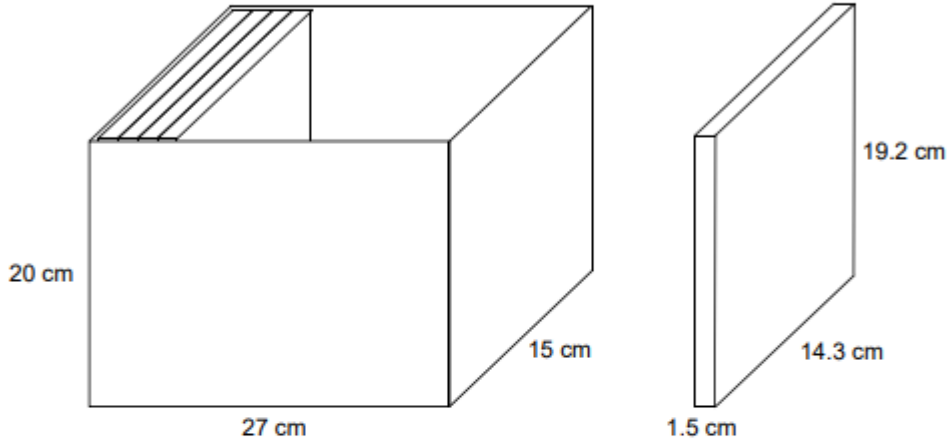
Answer _____

AQA GCSE – Sample Paper 3 (Calculator) Higher Tier

103.

- 21 A box is a cuboid with dimensions 27 cm by 15 cm by 20 cm
These dimensions are to the nearest **centimetre**.

DVD cases are cuboids with dimensions 1.5 cm by 14.3 cm by 19.2 cm
These dimensions are to the nearest **millimetre**.



Show that 17 DVD cases, stacked as shown, will definitely fit in the box.

[4 marks]
