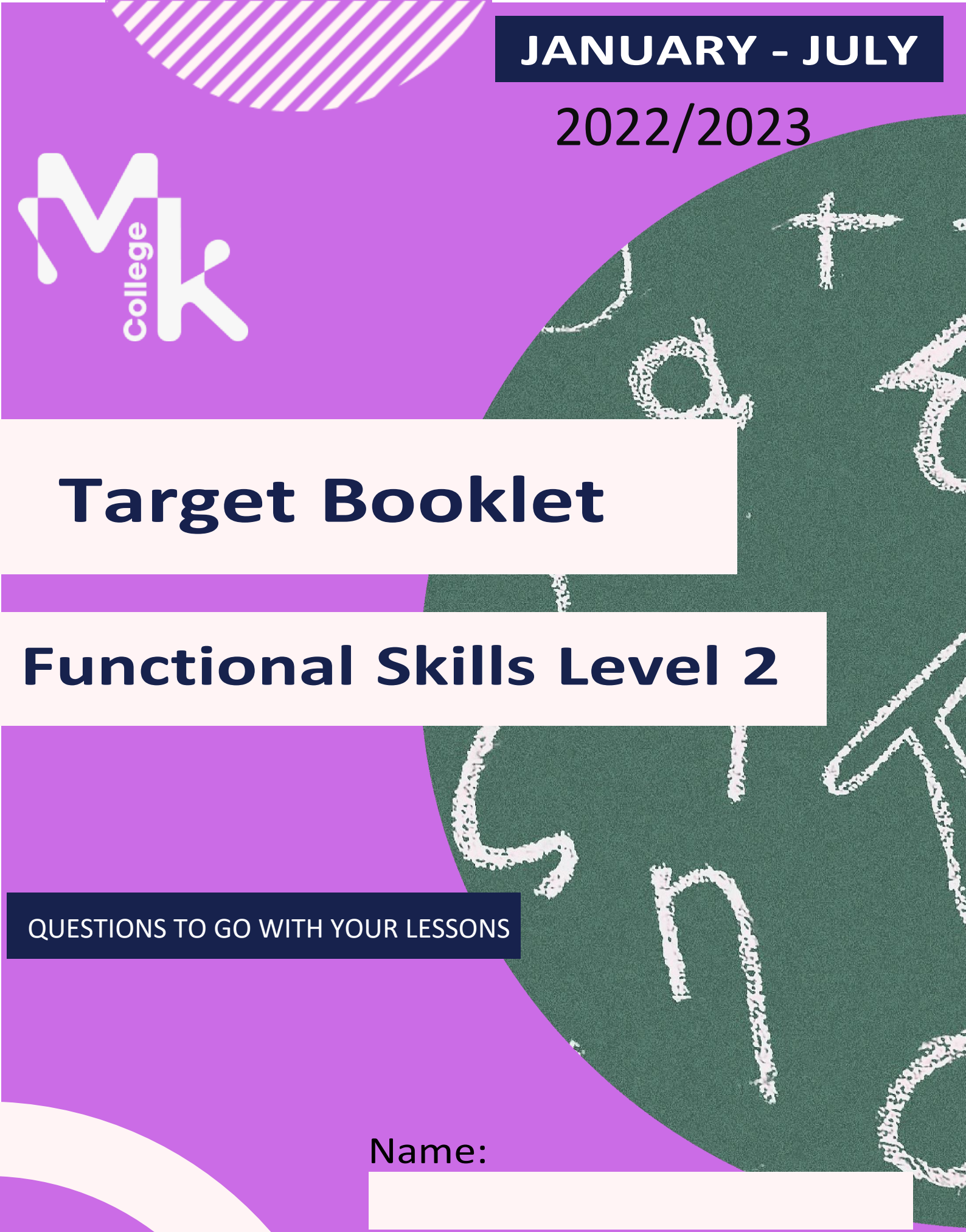
JANUARY - JULY

2022/2023



Target Booklet

Functional Skills Level 2

QUESTIONS TO GO WITH YOUR LESSONS

Name:

Vocational Course:

Contents

Source	Target	Completion (Y/N)

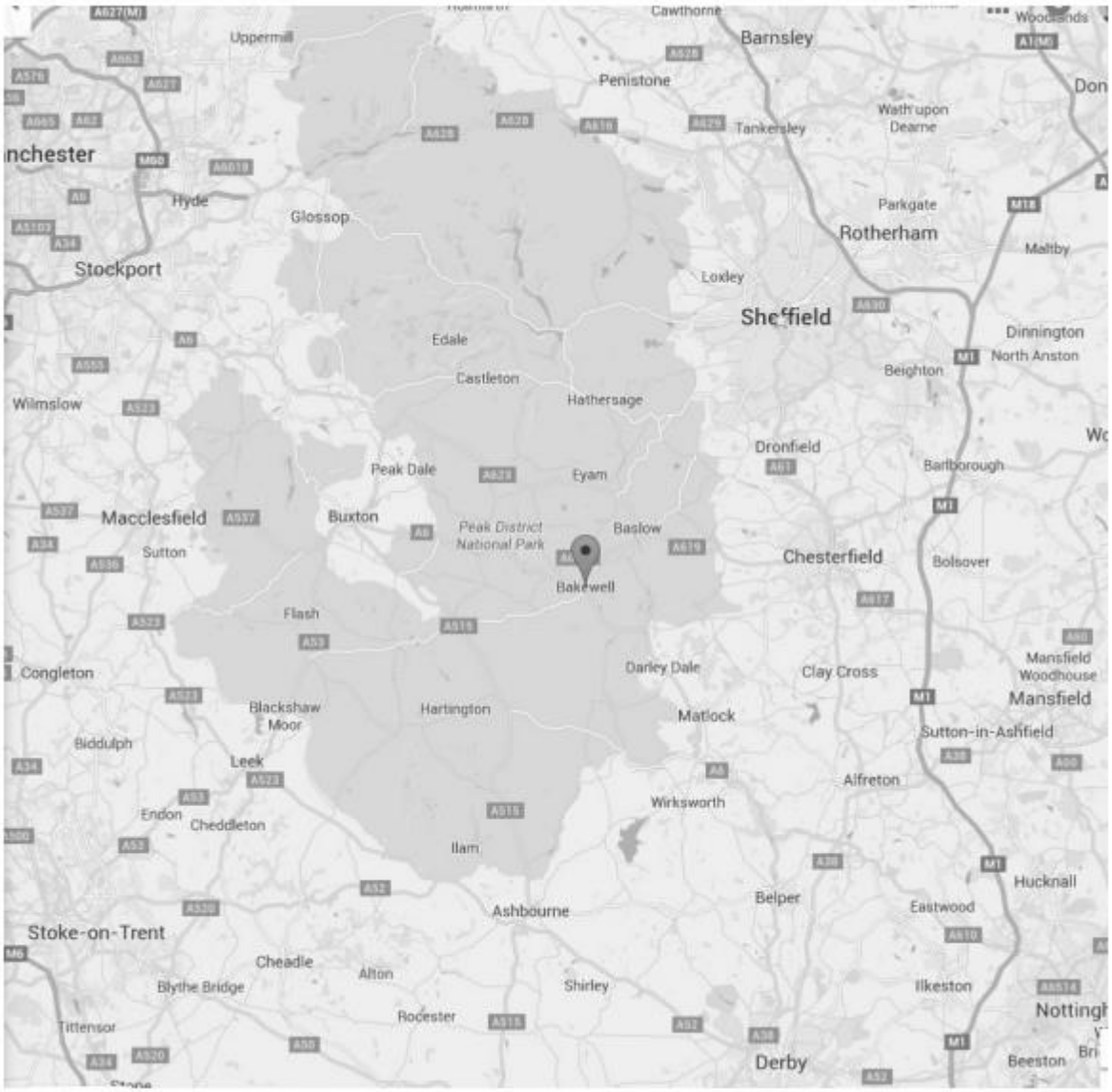
Targets

Source	Target	Completion (Y/N)

Scale

Calculator questions

1) Jabed is going to follow the hot air balloon.
He knows the hot air balloon can land up to 30 km away from Bakewell.

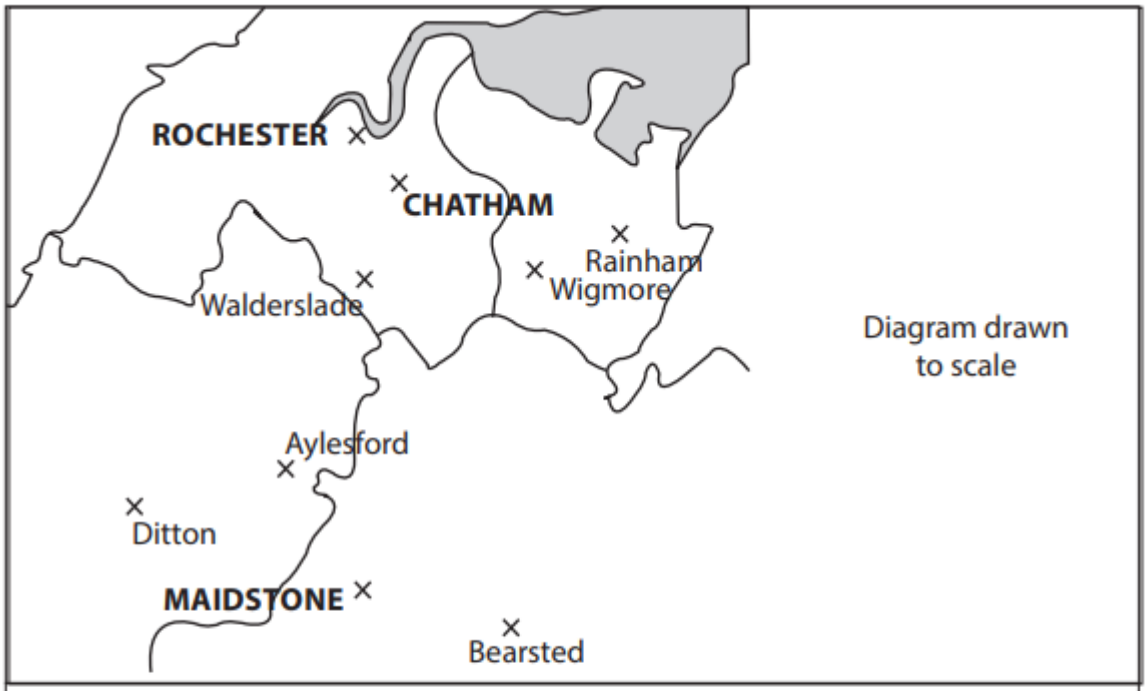


Scale 1 : 500 000

Jabed wants to show, on the map, where the hot air balloon can land.

Use the scale and show accurately on the map where the hot air balloon can land. (4)

2) Lucas offers free delivery to places within a 6 mile radius of Chatham.



Key 4cm on the diagram is 5 miles on the ground

Sarah lives in Maidstone.
She buys a TV sound bar from Lucas.

Sarah wants to know if she will get free delivery.

(b) Will Sarah get free delivery?
Show why you think this. (3)

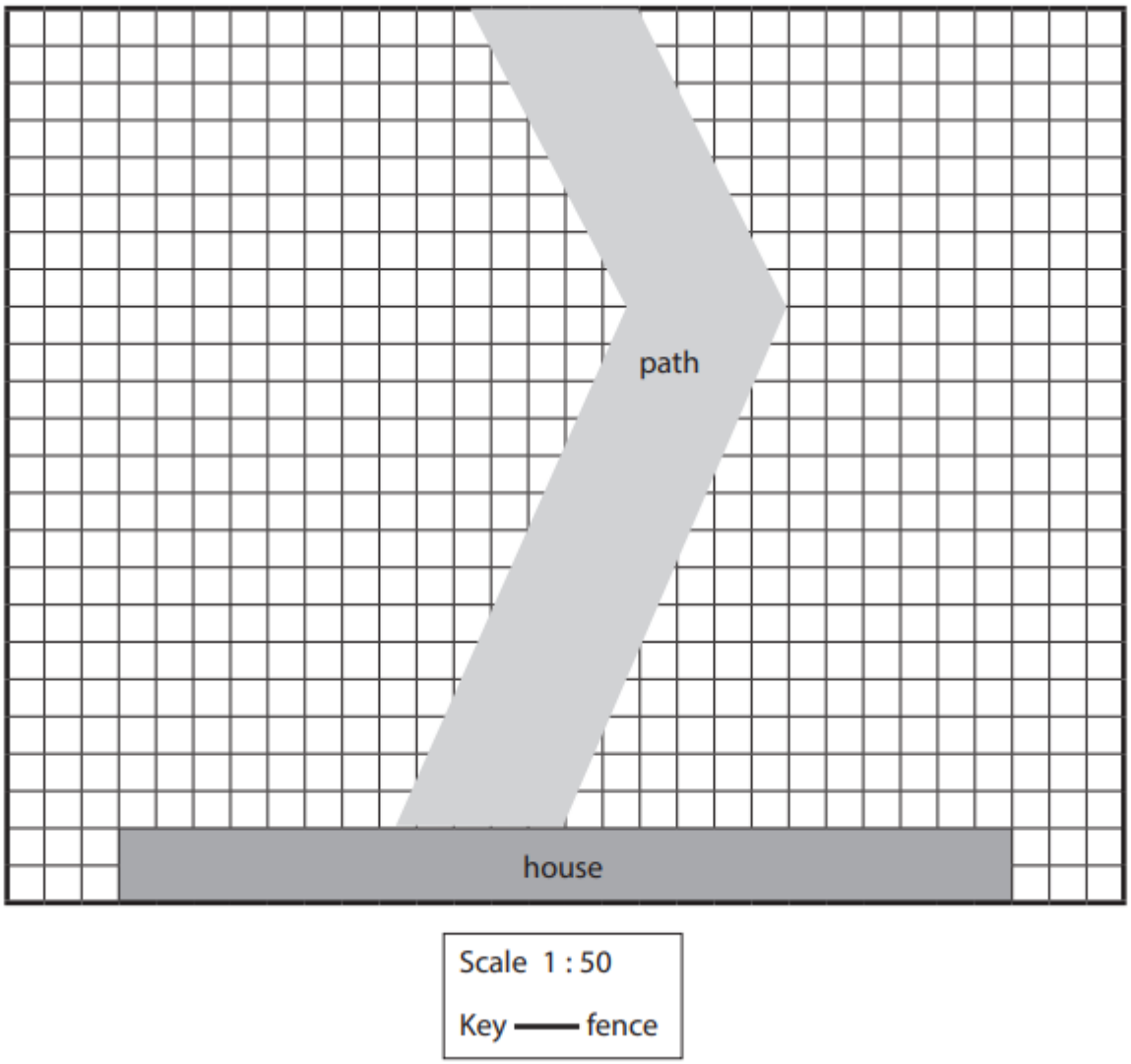
3) Kei is a landscape artist.
A client asks Kei to landscape his garden.

Kei designs a fish pond for the garden.
The pond needs

- a circular space with diameter 2.5 m
- to be at least 0.5 m from the path and from the fence
- to be at least 1.5 m from the house.

Kei makes an accurate plan of the garden using a scale of 1:50

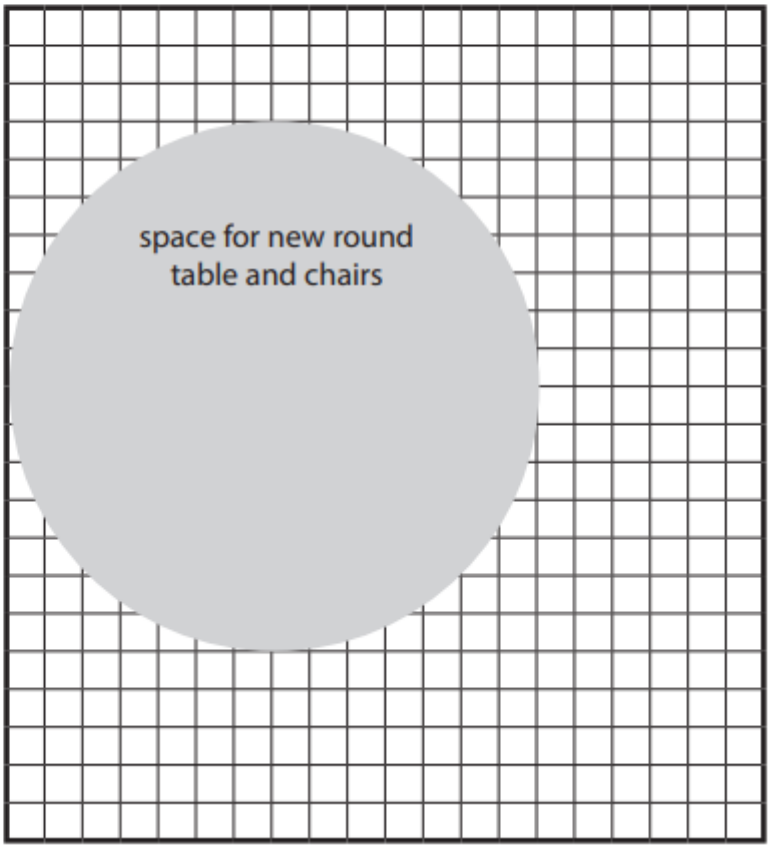
(a) Draw a space for the pond on the plan.
Remember to use the scale. **(3)**



4) Tomiko is planning a housewarming dinner for her friends.
She wants to buy a new round table for her dining room.

Tomiko has this floor plan of her dining room.

She has shaded the total space needed for
the new round table and
1 extra metre all around the table for chairs.



scale 1 : 50

Tomiko thinks that a round table with a diameter of 1500 mm is the biggest table that can fit in this space.

Is she correct?
Show why you think this. (4)

5) Katie wants a space to grow lettuce on her allotment.

She wants this space to be rectangular with an area of 5 m^2 to 6 m^2.
Katie needs a path around the space.
The path should be at least 150 cm wide.

She makes a plan of her allotment.

(a) Draw the space for the lettuce and the path on the plan.
Remember to use the key. (3)

(b) Evaluate the effectiveness of your plan. (1)

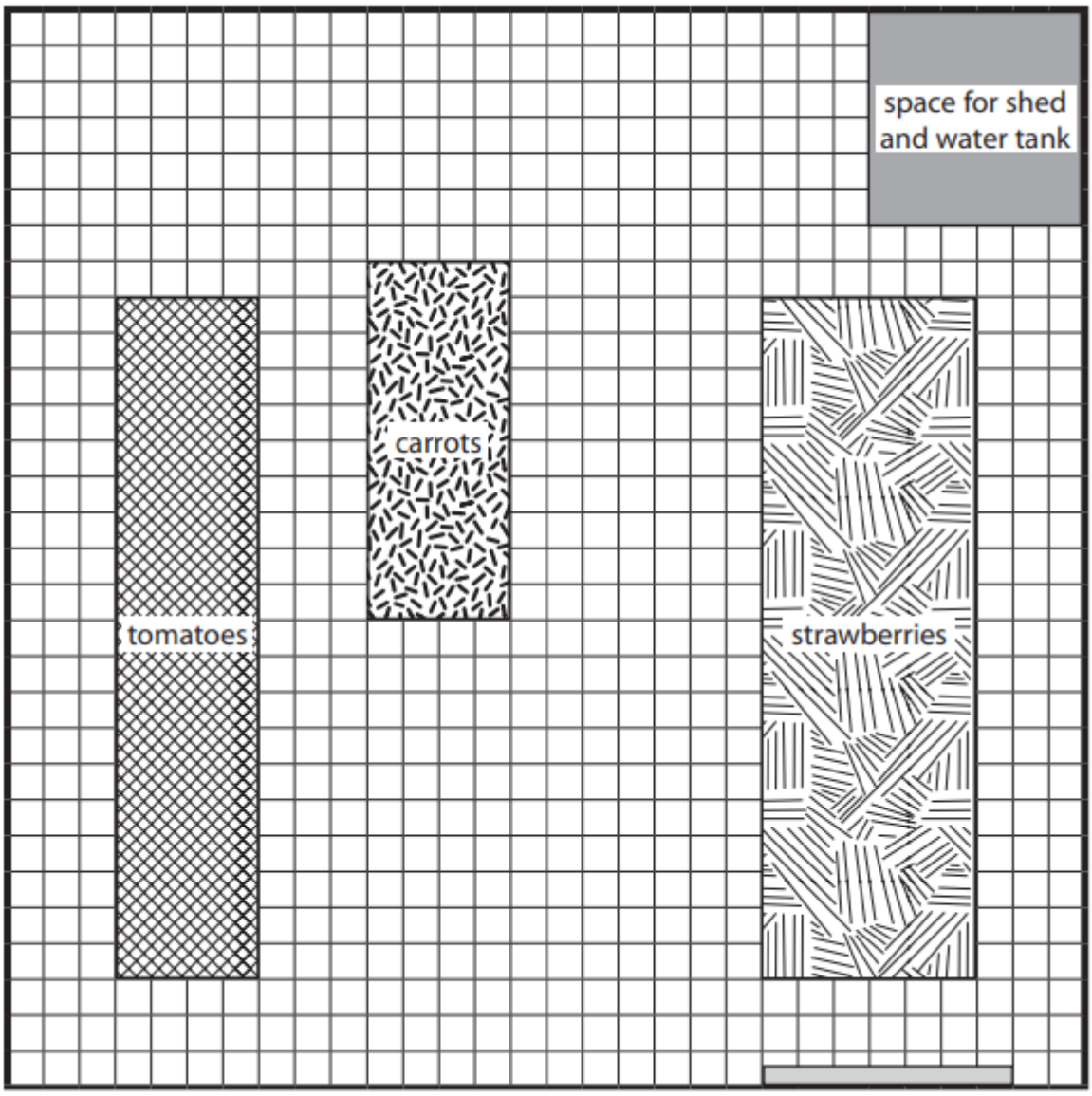
Write your evaluation in the box below.

Key

Scale 1 : 100

fence gate

Scale


space for shed
and water tank
carrots
tomatoes
strawberries

Notes

Scale

Measurement

Calculator questions

1) Pat and Chris have paid to take up to 40 kg of luggage on the flight.

Pat weighs the luggage on their bathroom scales.

The total weight of the luggage is 6 stone and 2 pounds.

Pat knows that

- 1 stone = 14 pounds
- 2.2 pounds = 1 kg

Does the luggage weigh less than 40 kg?

(3)

Use the box below to show clearly how you get your answer.

2) Tim is going to put a patio outside the hut.
The patio will be in the shape of a rectangle with length 7.2 m and width 6 m.

Tim is going to use paving stones to make the patio.
Each paving stone is square with sides of 600 mm.

Tim has already got 110 paving stones.

(b) Does Tim need to buy more paving stones?

(3)

Use the box below to show clearly how you get your answer.

3) Freya wants to compare the price of a meal in the UK with the price of a similar meal in France.

In the UK the price of 20 meals is £110
In France the price of 24 meals is 180 euros.

Freya knows that £1 = 1.22 euros.

(b) Is the price of a meal lower in the UK or France?
Show why you think this. (4)

Use the box below to show clearly how you get your answer.

4) Sarah works at a zoo.

An elephant calf is born at the zoo.
The elephant calf weighs 310 pounds.

Sarah weighs 63 kg.

She knows 1 kg = 2.2 pounds.

Sarah says,

"The elephant calf weighs more than $2\frac{1}{2}$ times as much as I do."

(a) Is Sarah correct?
Show why you think this. (3)

Use the box below to show clearly how you get your answer.

5) Asta needs a spanner for a $\frac{5}{8}$ inch nut on her camping stove.

The shop sells 12 mm spanners, 14 mm spanners and 16 mm spanners.

Asta knows that 1 inch = 2.54 cm

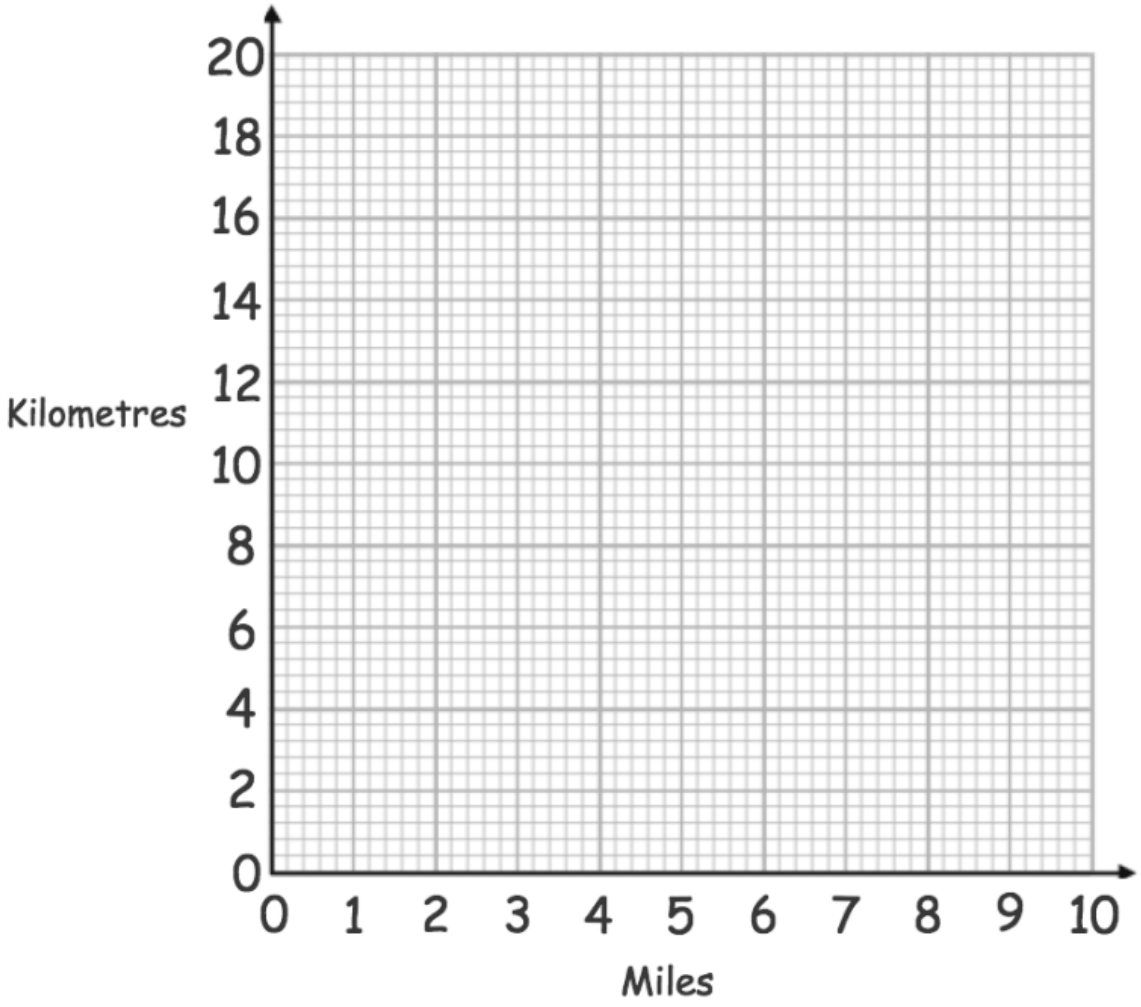
What is the best size spanner for Asta to buy? (3)

6 a) Use the fact “5 miles = 8 kilometres” to draw a conversion graph on the grid.

Use the graph to convert the following.

(b) 8 miles to kilometres (1)

(c) 6 kilometres to miles (1)



Notes

Percentages

Calculator questions

1) Jane wants to buy a barbecue.
She sees this offer

Barbecue £150	**Deposit 12.5%**
Remainder to be paid monthly over 6 months	

Work out the amount Jane will need to pay per month, round your answer to 2 decimal places. (3)

2) Michael wants to buy winter tyres for the car.

The normal price for the tyres is £400
There is a discount of 15% off the normal price.

Michael thinks 15% of £400 is £50

(c) Is 15% of £400 equal to £50?

(2)

Use the box below to show clearly how you get your answer.

3) Jill buys a car.
She knows that in the first year she will need

- to service the car
- to buy 4 new tyres.

She also wants to buy a set of car mats.

Jill considers two offers.

Price list

Service £150
Tyres £120 each
Set of car mats £45

Offer A

Pay £350

- Free service
- Free set of car mats
- $\frac{1}{3}$ off the price of tyres

Offer B

Pay £500

- Free tyres
- 35% off the price of the service

Which offer is the best value?
Show why you think this (5)

Use the box below to show clearly how you get your answer.

4) Josh is the manager of a carpentry company.
He needs to buy some new tools.

Josh wants 3 sets of chisels and a mitre box.

Tool	Price (excluding VAT)
Hacksaw	£15.08
Mallet	£4.78
Set of chisels	£20.92
Mitre box	£4.00
Framing square	£3.92

Josh needs to add 20% VAT to the total price of the tools.
He also has to pay £3.99 delivery charge.

(a) How much does Josh pay for the tools and the delivery?

(4)

Use the box below to show clearly how you get your answer.

5) Katrin's monthly payment for electricity went down from £38.60 to £34.20

She thinks this means that her monthly payment has gone down by 20%

Is Katrin correct?
Show why you think this.

(3)

6) Laypin has this information about the number of sales the company made last month.

	Type of customer	
Type of product	first time	returning
new	1634	5618
existing	435	2394
clearance	731	3012

(a) What percentage of the products sold last month to first time customers were new products?
Give your answer correct to 1 decimal place. (3)

Use the box below to show clearly how you get your answer.

Notes

Money

Calculator questions

1) One French website charges €195 per advert.
The company buys 5 of these adverts.

The exchange rate is £1 = 1.1025 euros.

What would be the total cost of the 5 adverts in pounds?

Write your answer in the box below. (3)

2) Magda has £1000 in her savings account.
She has 265 euros left over from her last holiday.
She puts this money into her savings account.

When Magda puts this money into her savings account, the bank converts the euros into pounds using £1 = 1.1452 euros.

The bank deducts a fee of £0.79 from her savings account for this conversion.

How much money does Magda now have in her savings account?

Write your answer in the box below. (3)

3) Shilpa has this information from renting out her boat in 2016.

Income (euros)	Costs (euros)
382 000	291 500

Profit = Income – Costs

Shilpa wants to know the profit as a percentage of her income.

Work out the profit as a percentage of Shilpa's income.
Give your answer correct to 1 decimal place.

Write your answer in the box below. (3)

4) The captain of the boat wants to get enough fuel for 7 hours of sailing.

He knows that the boat needs 67 gallons of fuel per hour of sailing.

1 gallon = 4.54 litres

The captain needs to know how many litres of fuel will be enough for 7 hours of sailing.

(a) Work out how many litres of fuel will be enough for 7 hours of sailing.

Use the space below to show clearly how you get your answer.

Write your answer in the box below. (3)

4b) Is this a sensible amount of fuel for the captain to get for 7 hours of sailing?

Give a reason for your answer.

Write your answer in the box below. (1)

5) Jai wants to compare the fuel costs of an electric car with his petrol car.

He knows

- his petrol car covers 44 miles per gallon
- 1 gallon of petrol costs 549 pence.

He finds the following information about an electric car

- it covers 3.2 miles per kilowatt of electricity
- 1 kilowatt of electricity costs 9.7 pence.

Jai thinks the cost of fuel for the electric car is 1/4 the cost of fuel for his petrol car.

Is Jai correct?
Show why you think this.

Write your answer in the box below. (4)

6) Scott withdraws 2000 Moroccan dirham from a cash machine in Morocco.

These are the charges that Scott has to pay.

- 2.75% of the cash he withdraws for changing currency.
- 3% of the cash he withdraws for using a cash machine in Morocco.

Scott has to pay both charges in British pounds.

1 British pound = 12.74 Moroccan dirham

What is the total of the charges in British pounds that Scott has to pay?

Use the space below to show clearly how you get your answer.

Write your answer in the box below. (4)

7) Matt and Julia find a two bedroom house to rent.
Matt will have the bigger bedroom.

They have this information about the costs they need to pay between them before they can move in.

• Rent for 1 month	£895
• Administration fee	0.7 x monthly rent
• Deposit	1.25 x monthly rent

Matt and Julia will split the total of these costs in the ratio 3 : 2

(a) How much does Matt have to pay before they move in?

Explain your answer in the box below. (6)

8) Mo works for a train company.

Mo manages track repairs.
He needs to order 60 tonnes of stones for a track repair.
The stones are sold in full cuboid containers.
A full container of stones is 80 cm by 80 cm by 70 cm.
Mo knows that

- $1m^3$ of the stones weighs 1.8 tonnes
- each container of stones costs £45.16

Mo wants to order the smallest number of containers of stones as possible.

Work out the total cost of the containers of stones Mo needs to order.

Write your answer in the box below. (6)

Notes

Compound Measurement

Non - Calculator questions

1) Zoe needs to do some things before the party.
This is her list.

- 11:45 am hair appointment at salon (one and a half hours)
- Then collect the cake from the bakery (10 minutes)
- Finally, buy decorations at the arcade (a quarter of an hour)

She knows that it takes

- 13 minutes to drive from the salon to the bakery.
- 12 minutes to drive from the bakery to the arcade.
- 16 minutes to drive from the arcade to her home.

These times include time to park her car.

Zoe wants to do all the things on the list and return home by 2:30 pm.

Can Zoe do all the things on the list and return home by 2:30 pm? (3)

2) Runners who complete the race in 2 hours 15 minutes or less get a gold medal

Bradley completed the race in 2 hours 13 minutes 22 seconds.

Work out the difference between 2 hours 15minutes and 2hours 13 minutes 22 seconds

(3)

Calculator questions

3) Adnan, Fayez and Toni are the 3 drivers working on Saturday.

Ellie needs to complete a booking sheet for each driver.

Some bookings have already been made for Saturday.

Ellie needs to add these new bookings to the booking sheets.

Client	**Time**
Mr Harding	9 am to 12 pm
Barker family	9:30 am to 11 am
Mr and Mrs Khan	12 pm to 1:30pm
Ms Singh	1pm to 2:30 pm

Ellie needs to allow at least 45 minutes between each booking.

Complete the booking sheets for the drivers.

(3)

Driver: Adnan	**Day:** Saturday
Time	**Client**
9am to 12 pm	Magenty family

Driver: Fayez	**Day:** Saturday
Time	**Client**
1 pm to 3 pm	Mr and Dr Pacitti

Driver: Toni	**Day:** Saturday
Time	**Client**
2:30 pm to 5 pm	Lee family

4) At the beginning of the week Fayez writes down the mileage of his limousine.

Mileage
2529

At the end of the week the mileage is 2834

Fayez knows he used 75.2 litres of petrol during this week.

The handbook states that the limousine uses 1 gallon of petrol for every 20 miles.

Fayez wants to know if his limousine used 1 gallon of petrol for every 20 miles that week.

Use 1 gallon = 4.54 litres

Did his limousine use 1 gallon of petrol for every 20 miles that week?

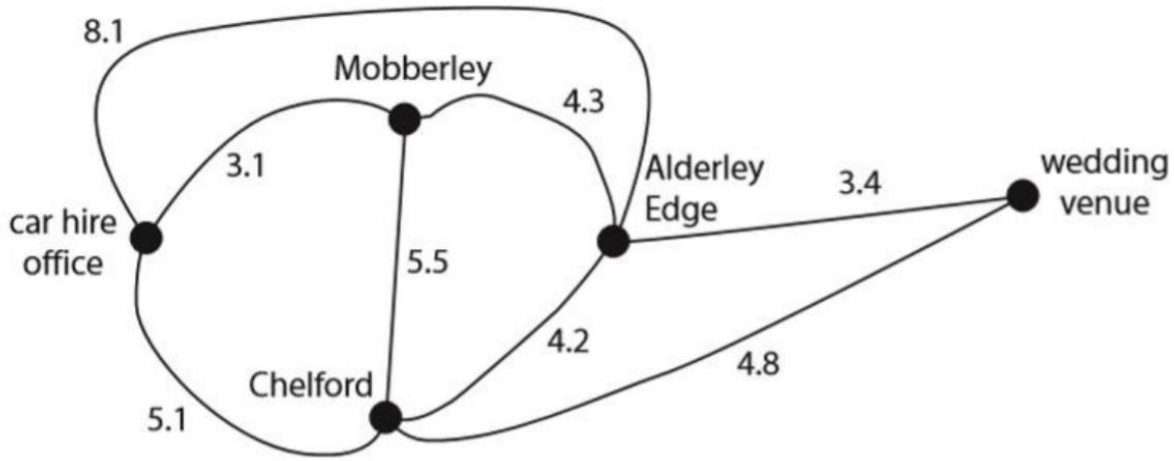
(4)

5) On Friday Toni will take some clients to a wedding venue.

He will

- Start at the car hire office
- Pick up clients in Alderley Edge, Chelford and Mobberley
- Then take all of these clients to the wedding venue

The plan shows distance in miles.



Toni wants to use the shortest route.

a) Find the shortest route for Toni.

Work out the distance of this route. (3)

b) What else should Toni take into account when he plans his route?

(2)

6) Enid uses part-time staff in her coffee shops.

In her Taunton coffee shop she needs

- 2 part-time staff working from 7am to 9am
- 3 part-time staff working from 12 pm to 4 pm
- 1 part-time staff working from 4pm to 5pm

Here is the list of part-time staff and information about when they can work.

Name	Number of hours available	Notes
Leon	2	Morning only
Naomi	4	Starts at 12 o'clock or later
Pat	3	Starts at 2pm
Roma	3	Starts at 12 o'clock or later
Shola	5	Any time

Only one of Roma or Shola is available to work between 3 pm and 4 pm.

Enid needs to organise a schedule for the part-time staff.

Complete the schedule for Enid. (3)

	7-8am	8-9am	12-1pm	1-2pm	2-3pm	3-4pm	4-5pm
Leon							
Naomi							
Pat							
Roma							
Shola							

7) Vinnie works at an entertainment park

He earns £8.75 an hour.

Last week Vinnie worked for 5 days from 10 am to 6pm.

Vinnie had one hour lunch break each day.

The hour lunch break is included in the times shown above.

Vinnie does not get paid for his lunch break.

How much did Vinnie earn last week? (3)

8) Georgie charges £15 per hour to plaster.

She knows it takes her 20 minutes to plaster an area of 1m²

Georgie needs to plaster an area of 58.5 m²

How much should Georgie charge to plaster an area of 58.5m²

Show a check of your working. (4)

Notes

Area and Perimeter

Calculator questions

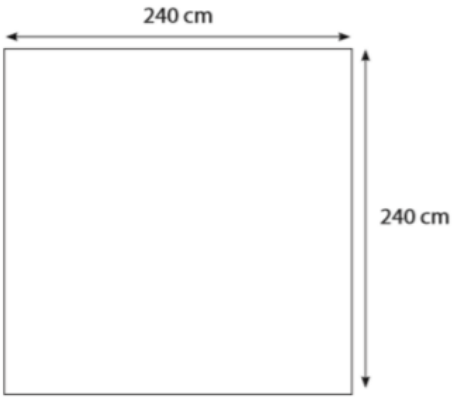
1) Eric builds a flat ramp in his garden.

The surface of the ramp will be a square built from sheets of plywood.

The plywood is attached to a frame using screws.

Eric needs one screw in each corner and one screw every 30cm along each edge of the ramp surface.

The ramp surface is 240cm by 240cm.



How many screws does Eric need for the ramp surface?

Show your working and write your answer in the box below. (3)

2) Cora organises a fashion show at a venue.

She must work out if the room is big enough for the fashion show.

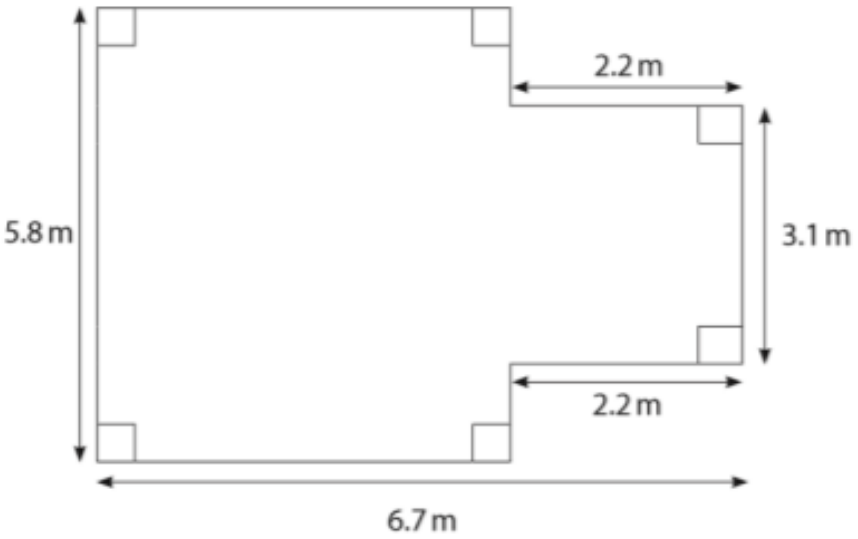


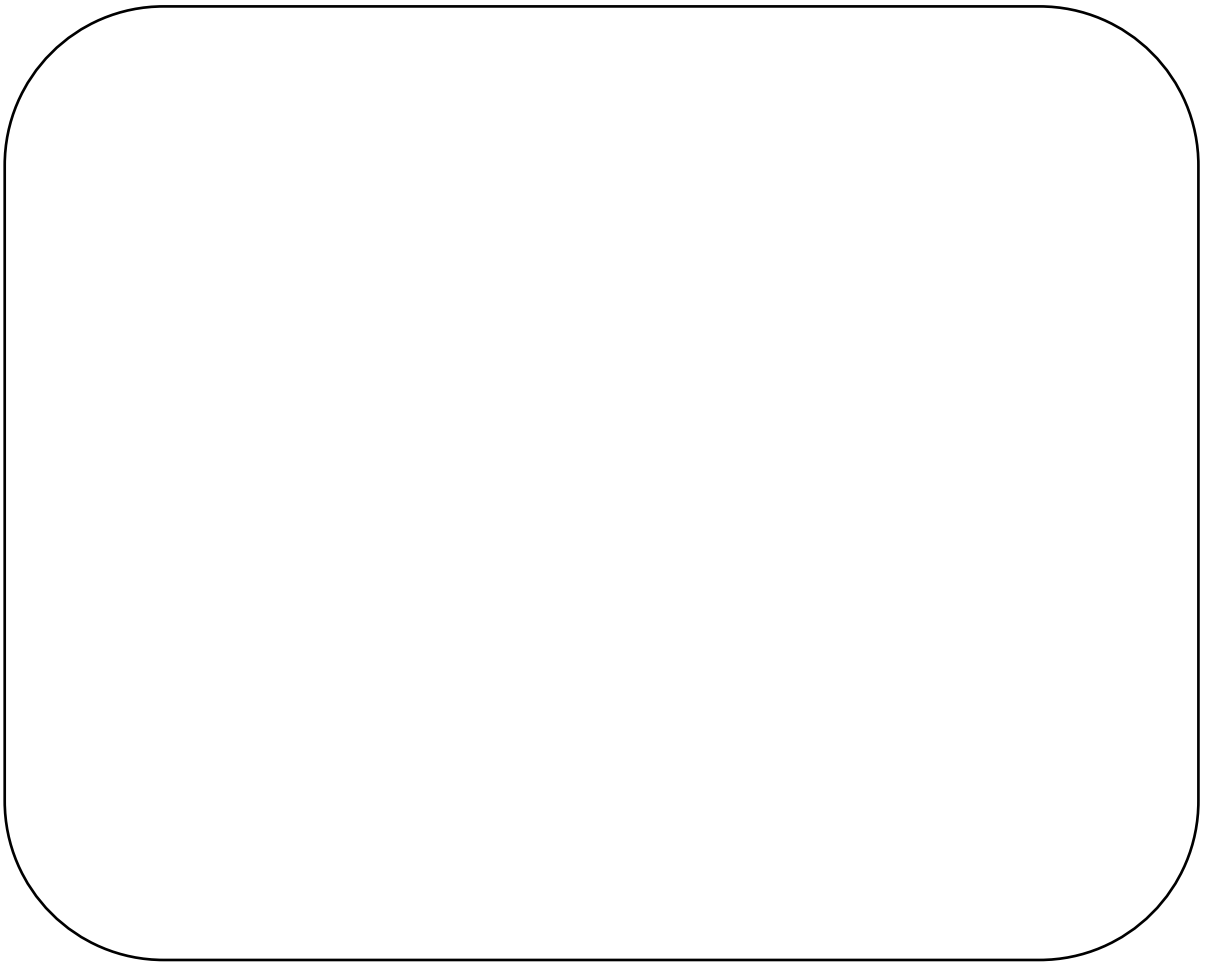
Diagram **not** accurately drawn

Cora allows $1m^2$ of the floor space for 2 people.

She thinks there is enough floor space in the room for 60 people.

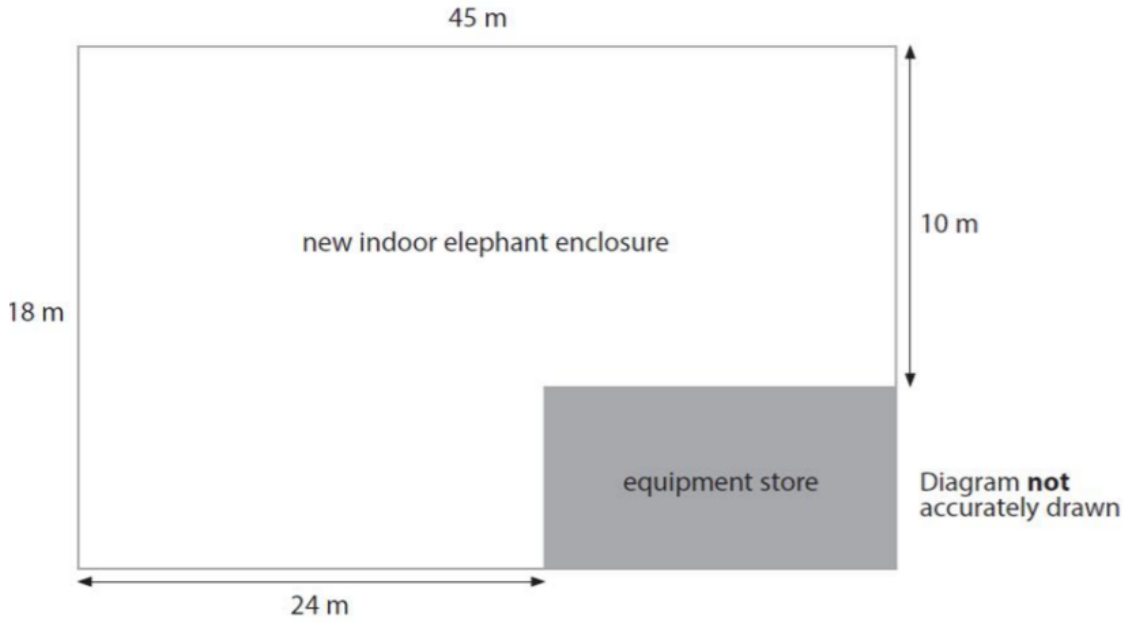
Is Cora correct?

Show your working and write your answer in the box below. (5)



3) Gary is a manager at the zoo.

He is checking the plans for the new indoor elephant enclosure.



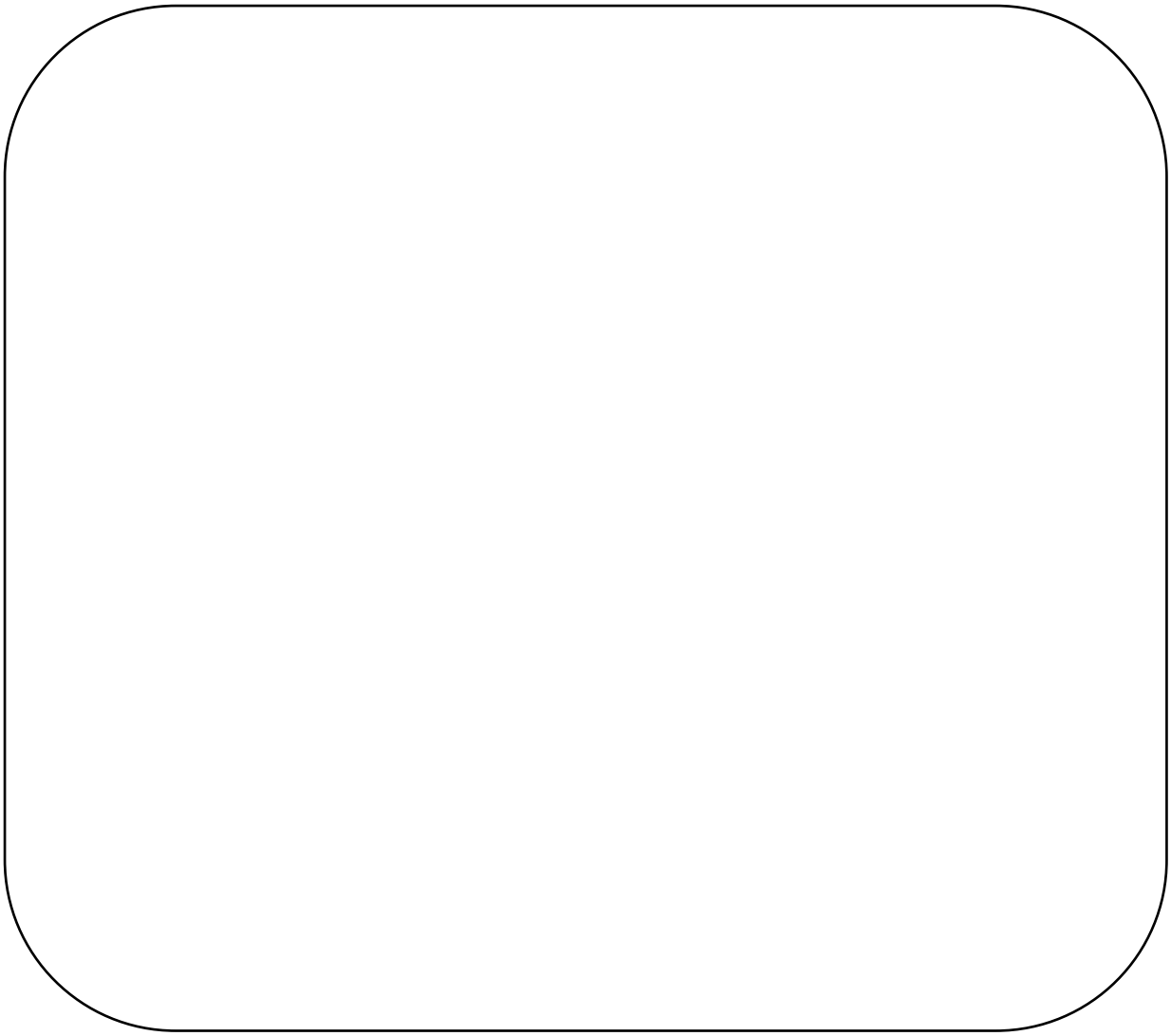
Gary finds out this information.

Indoor enclosures should provide A minimum of 200m² of floor space for 4 (or fewer) elephants and an extra 80m² of floor space for each additional elephant

He wants there to be enough space in the new indoor elephant enclosure for 10 elephants.

Is there enough floor space for 10 elephants in the new indoor elephant enclosure?

Show your working and write your answer in the box below. (5)



4) The sketch shows the dimensions of a lounge floor.

All the corners in the room are right angles.

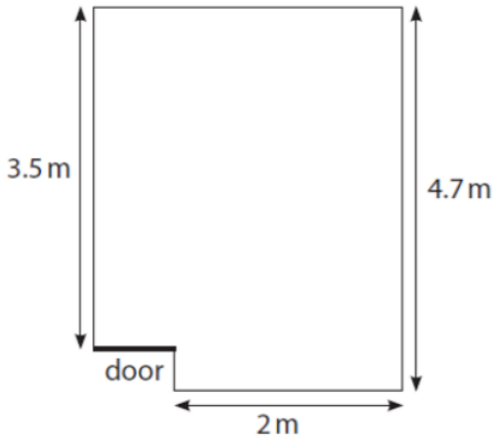


Diagram **not** accurately drawn

The door is 1.25m wide.

Julia wants to put string lighting in the lounge.

She wants the lights to go all the way around the room.

The lights will go above the height of the door.

Julia wants enough string lighting to cover at least 1½ times the total distance around the room.

She thinks 25 metres of string lighting will be enough.

Is Julia correct?

Show your working and write your answer in the box below. (4)

5) Ellie is the manager of a limousine hire company.

This is a plan of the driveway.

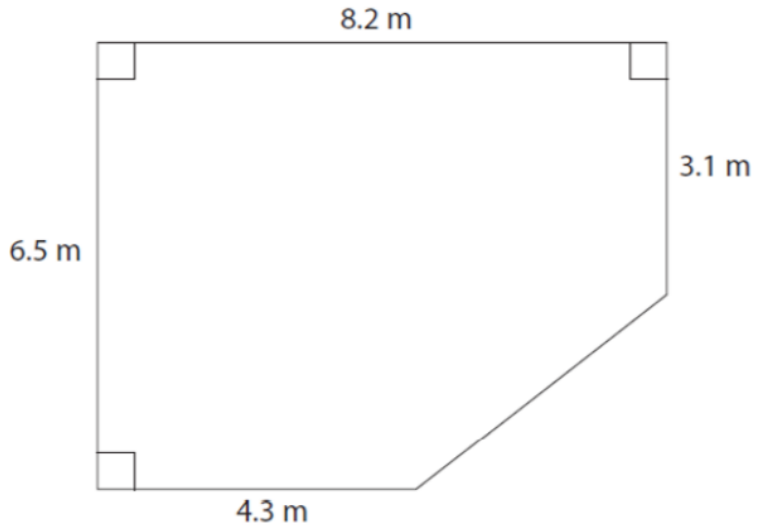


Diagram **not** accurately drawn

Ellie wants to cover the driveway with paving stones.

The paving stones can be cut to fit the space.

Ellie will by the paving stones in packs.

Each pack covers an area of 4.51m²

What is the least number of packs of paving stones Ellie needs to buy?

Show your working and write your answer in the box below. (5)

Notes

Volume and Surface Area

Calculator questions

1) Eric builds a flat ramp in his garden.

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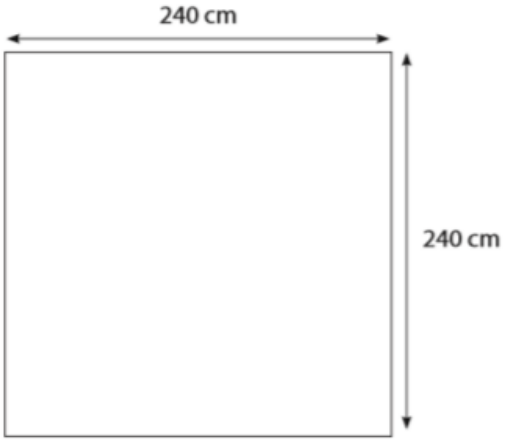

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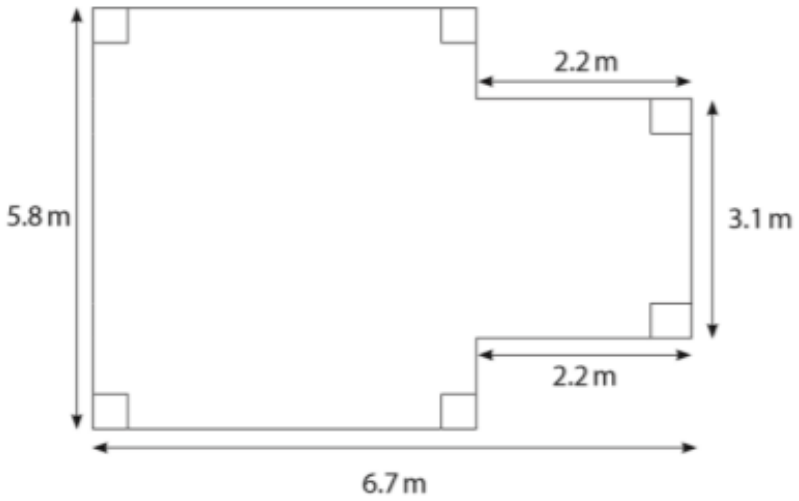

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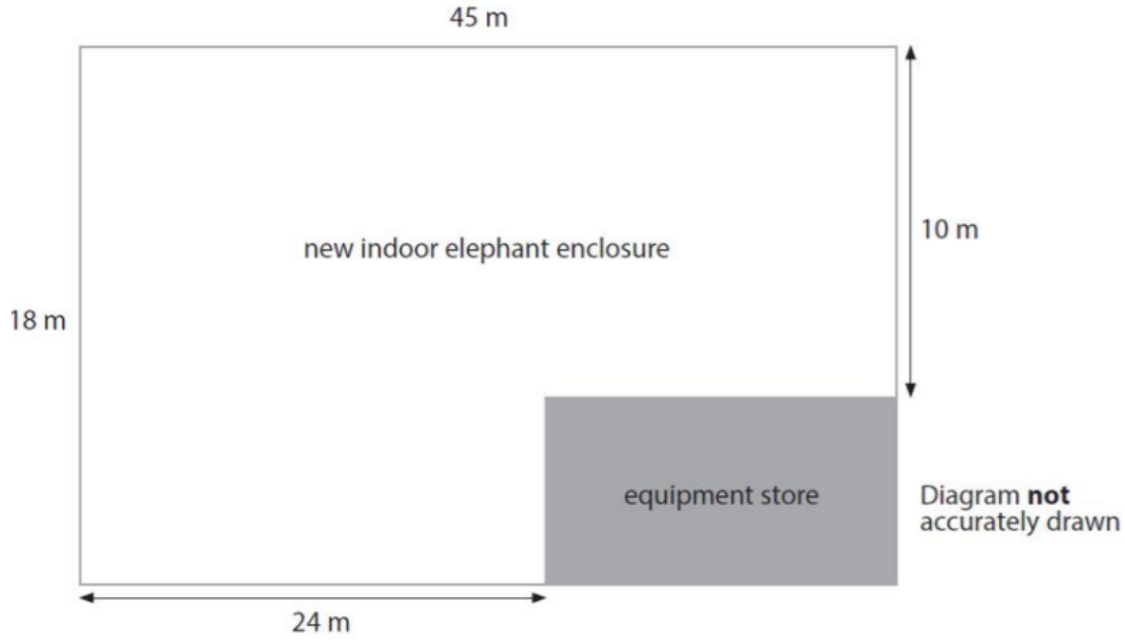

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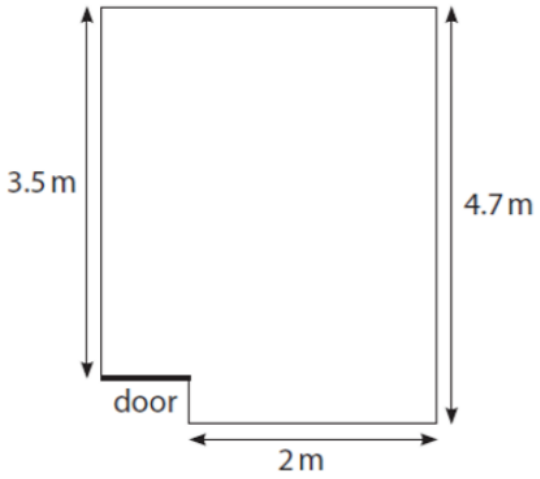

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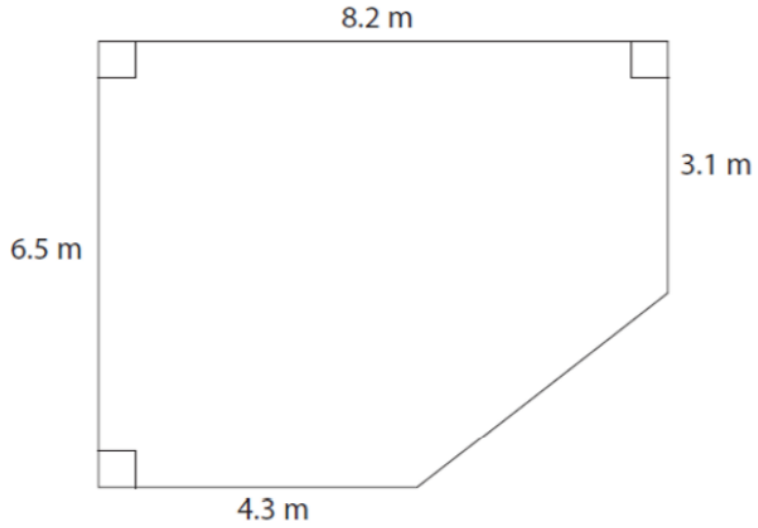

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Ellie wants to cover the driveway with paving stones.

The paving stones can be cut to fit the space.

Ellie will by the paving stones in packs.

Each pack covers an area of $4.51m^2$

What is the least number of packs of paving stones Ellie needs to buy?

Show your working and write your answer in the box below. (5)

6) Barney has 2200cm³ of cake mixture.

He needs to put the cake mixture into a tin.
Barney has two cake tins.

Tin A has a rectangular base 21cm by 15cm.
The height of this tin is 7cm.

Tin B has a square base of side length 23cm.
The height of this tin is 5cm.

Which tin should Barney use?
Give a reason of your choice and write your answer in the box below. (4)

7) Mo manages track repairs.

He needs to order 60 tonnes of stones for a track repair.

The stones are sold in full cuboid containers.

A full container of stones is 80cm by 80cm by 70cm.

Mo knows that

- $1m^3$ of the stones weighs 1.8 tonnes
- each container of stones cost £45.16

Mo wants to order the smallest number of containers of stones as possible.

Work out the total cost of the containers of stones Mo needs to order.

Show your working and write your answer in the box below. (6)

8) A room in the leisure centre is used as a gym.
The room is in the shape of a cuboid.

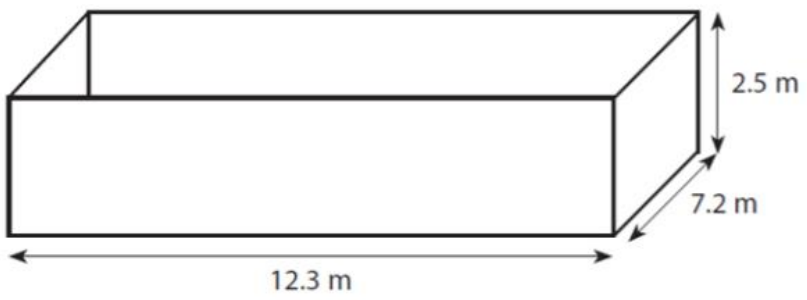


Diagram **not** accurately drawn

A fan is used to remove the air from the gym and replace it with fresh air.

The fan needs replacing.

The new fan must replace the air in the gym at the **greater** of

- 2.5 times the volume of air in the room per hour
  or
- 28800 litres per hour for each person in the gym.

There can be a maximum of 18 people in the gym.

$1m^3$ is equal to 1000 litres.

At what rate in m^3 per hour must the new fan replace the air?

Show your working and write your answer in the box below. (1)

9) Jose is a builder.

He is going to build a new garage.

The garage will be in the shape of a cuboid.

He has this drawing of the garage.

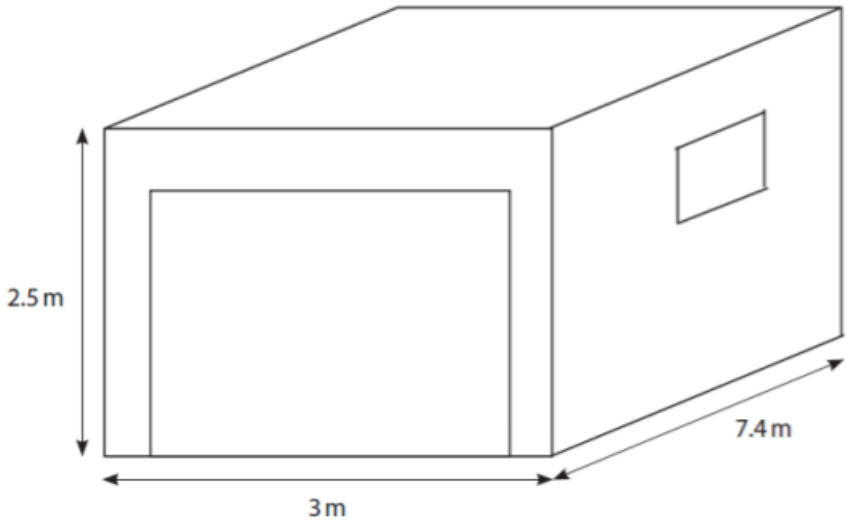


Diagram **not** accurately drawn

Jose decides that

- $\frac{3}{4}$ of the total area of the four sides of the garage will be made of bricks
- he will not use any bricks for the floor of the roof.

Jose knows $1m^2$ of brick wall needs 60 bricks.

He will buy the bricks in packs.

There are 360 bricks in each pack.

Jose thinks that 7 packs of bricks is enough for the garage.

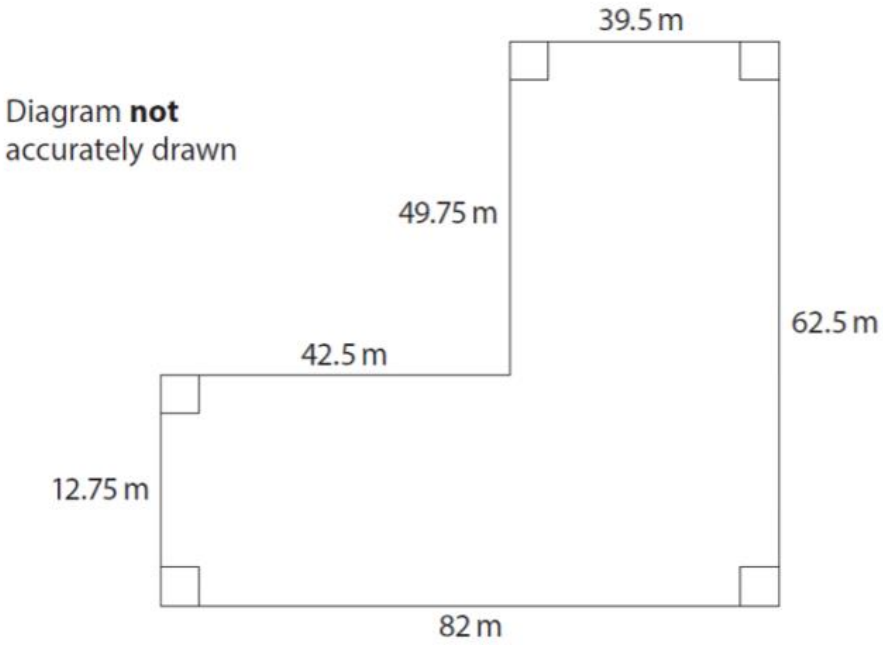
Is Jose correct?

Show why you think this and write your answer in the box below. (6)

10) Kali works for a building company.

She needs to put a new surface on the car park of the car trading company.

The diagram shows the section of the car park that needs a new surface.



Kali will cover the whole section of the car park with concrete.

The concrete will be 0.09m deep.

What is the total volume of concrete Kali will need?

Show a check of your working and write your answer in the box below. (5)

Notes

Fractions, Decimals and Percentages

Non calculator questions

1) (a) Write $\frac{7}{10}$ as a decimal.

.....

(1)

(b) Write 0.45 as a percentage.

.....%

(1)

(c) Write 30% as a fraction.
Give your fraction in its simplest form.

.....

(2)

2) Write these numbers in order of size.

Start with the smallest number.

$0.6 \qquad \frac{2}{3} \qquad 65\% \qquad 0.606$

(2)

3) (a) Write $\frac{1}{2}$ as a decimal.

.....

(1)

(b) Write 0.3 as a fraction.

.....

(1)

(c) Write 0.8 as a percentage

.....%

(1)

4) Work out the difference in value between $\frac{1}{4}$ and 30%.

(2)

Calculator questions

5) The table gives some information about student attendance at a school on Friday.

	Number of students		
Year	**Present**	**Absent**	**Total**
Year 7	192	16	208
Year 8	219	22	241
Year 9	234	28	262
Year 10	233	28	261
Year 11	214	24	238

The school has a target of 94% of students being present each day.

Did the school meet its target on Friday?

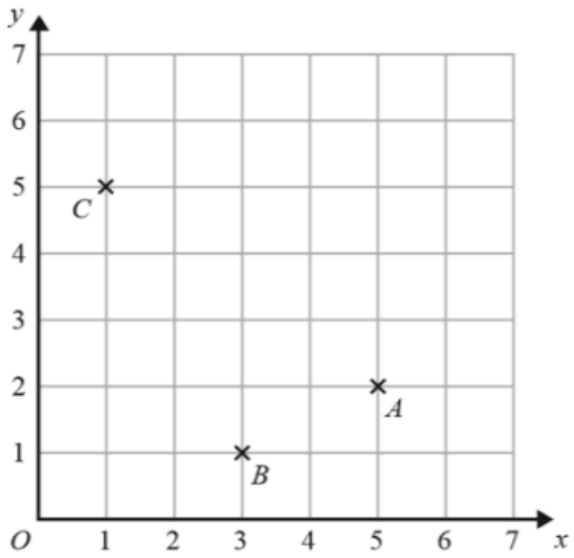
(3)

Notes

Co-ordinates

Non calculator questions

1)



(a) Write down the coordinates of point *C*

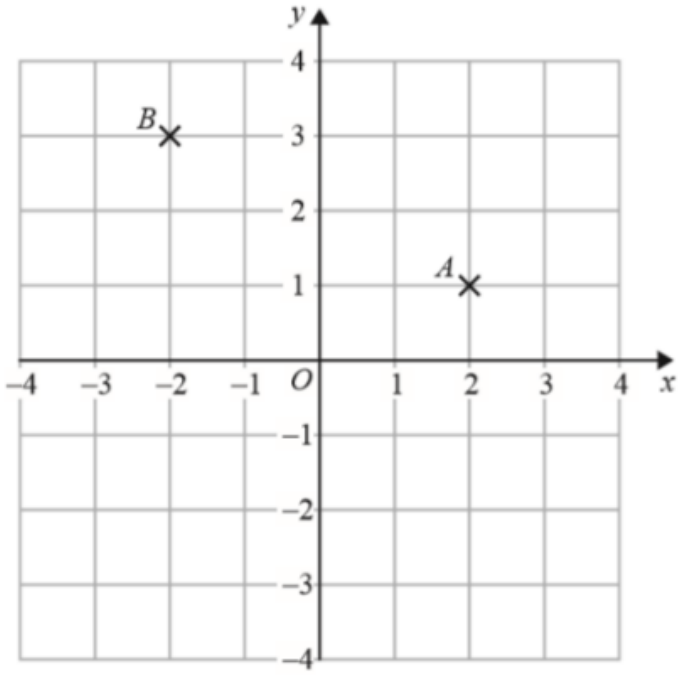
(1)

(b) On the grid, mark with a cross (X) the point *D* so that *ABCD* is a rectangle.

Label this point *D*.

(1)

2)



(a) Write down the coordinates of point *A*.

(1)

(b) Write down the coordinates of point *B*.

(1)

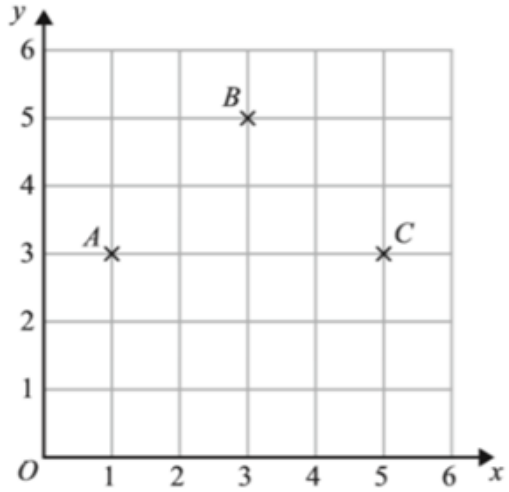
(.....,.....)

(c) On the grid, mark with a cross (X) the point (-3, -1)

Label this point *C*.

(1)

3)



(a) Write down the coordinates of point *C*.

(1)

(.....,.....)

(b) Write down the coordinates of the midpoint of *AB*.

(1)

(.....,.....)

(c) On the grid, mark with a cross (X) the point *D* so that *ABCD* is a square.

Label this point *D*.

4) Here is a triangle.

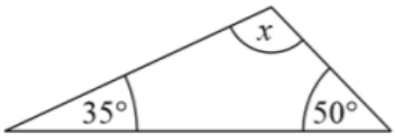


Diagram **NOT** accurately drawn

(a) (*i*) Work out the size of the angle marked x.

(1)

.....°

(*ii*) Give a reason for your answer.

(1)

5)

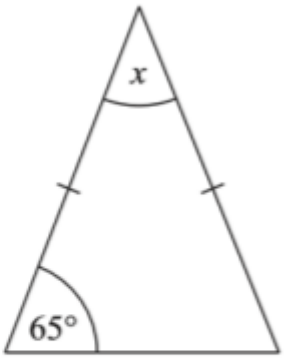


Diagram **NOT** accurately drawn

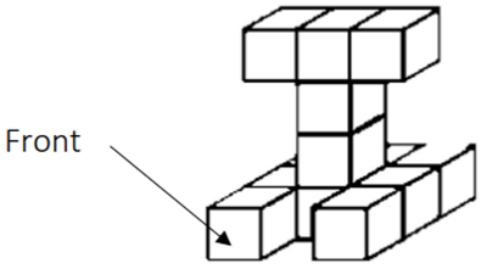
Work out the size of the angle marked x.

(3)

Notes

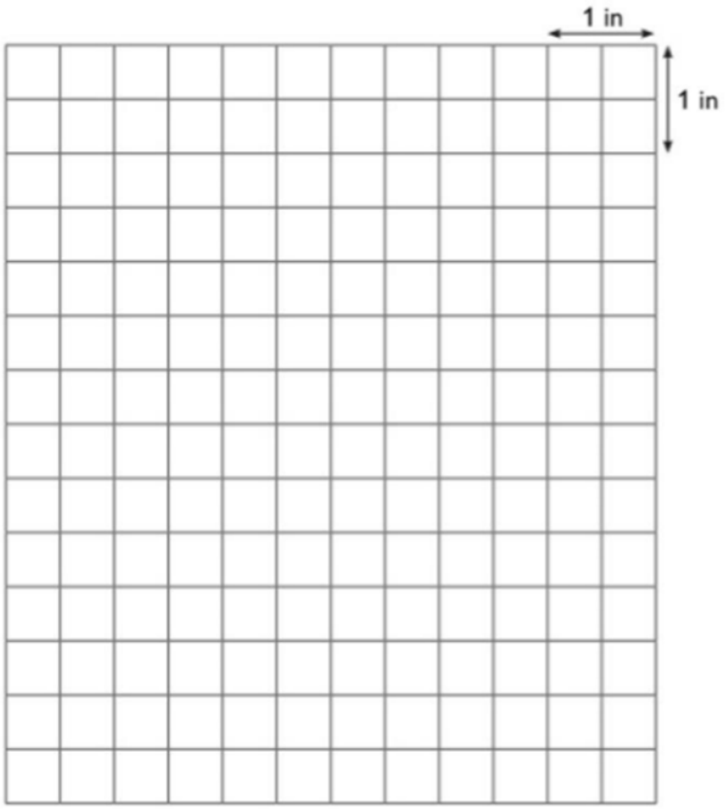
2D and 3D Shapes

1) Natasha is organising an awards show.
The diagram shows her design for the trophy.



The trophy is made of cubes. Each cub has a width of $1\frac{1}{2}$ inches.

Draw the front elevation of the trophy on the grid below. (2)



2) FS L2 – Jan 2018 – Q5

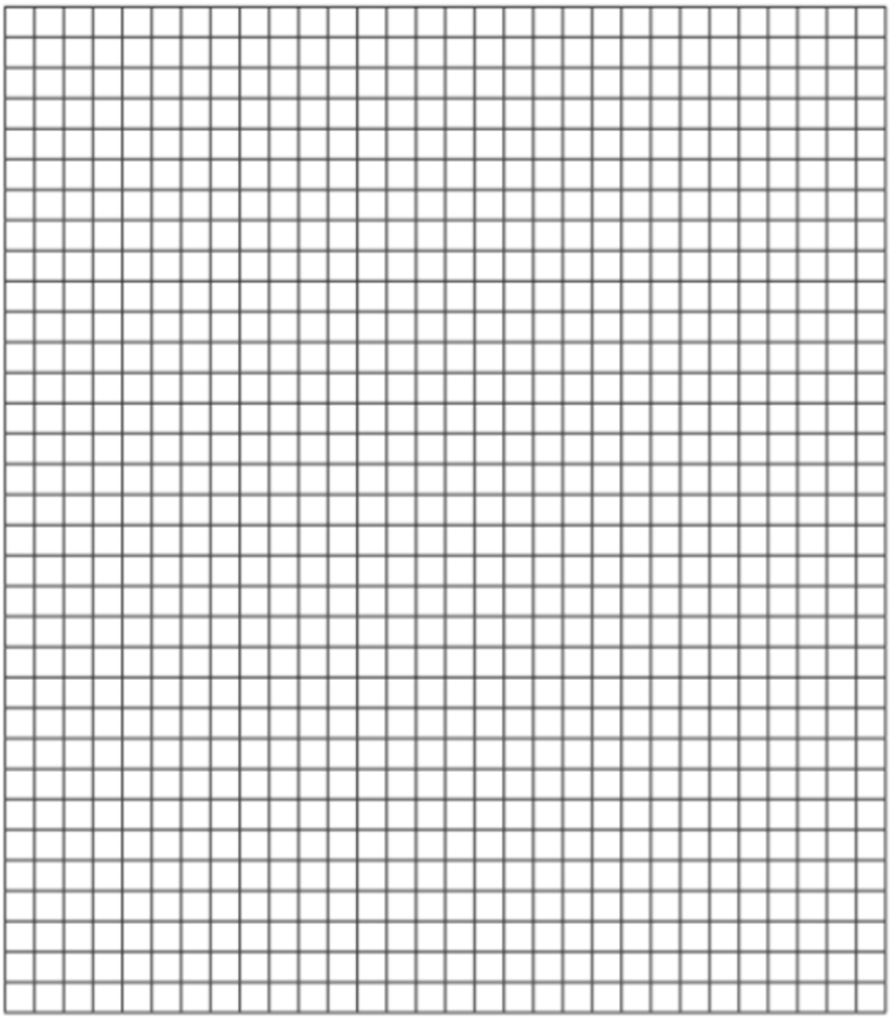
Tina wants to design a closing silver box for her coin.

She wants the box to be in the shape of a cuboid with

- Square base of side length 5 cm
- Height of 1.5 cm.

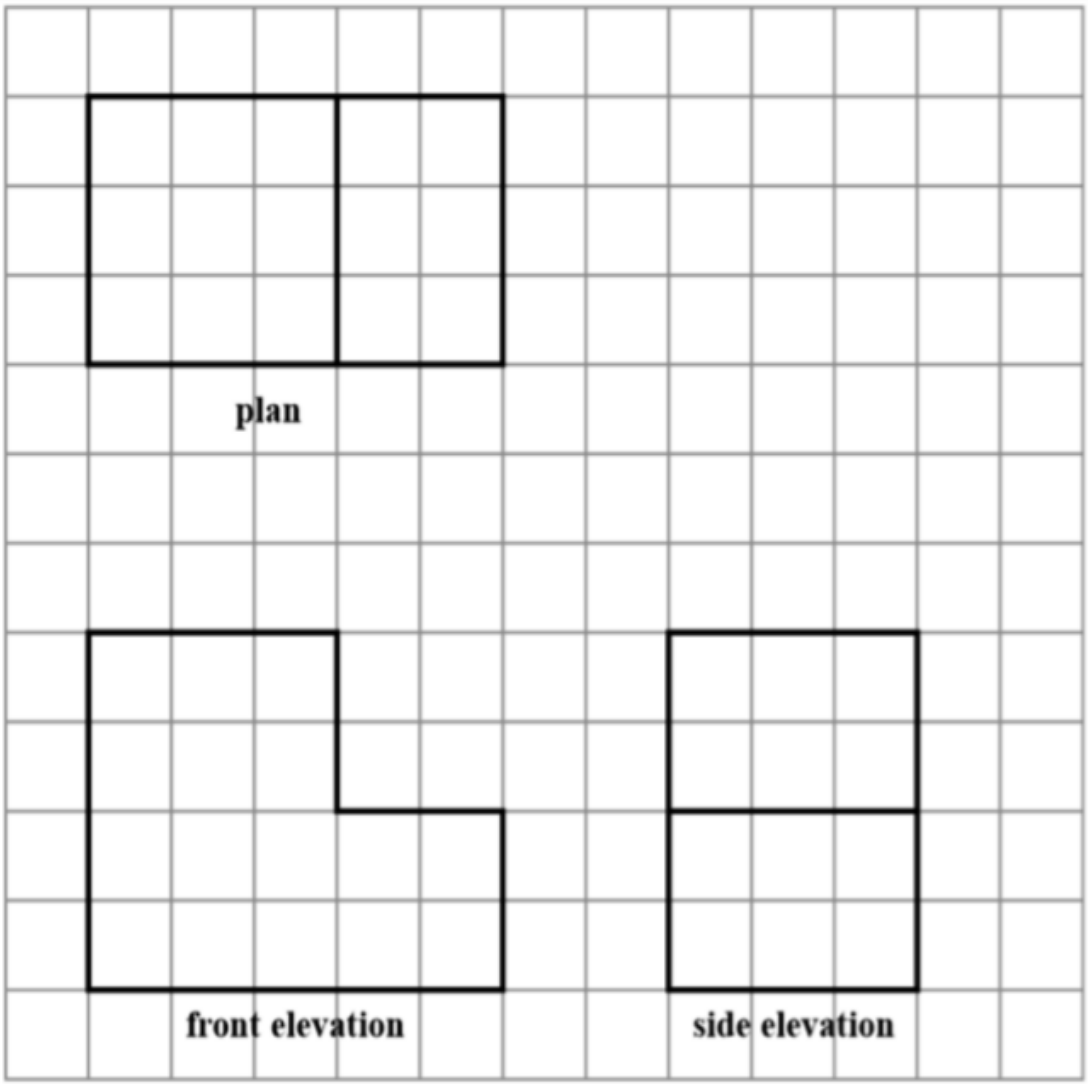
Tina needs to draw an accurate net of the box for a jeweller.

Draw an accurate net of the box for Tina. (3)
Use the grid below to draw the net.



3) GCSE – SP 1F – Q26

The plan, front elevation and side elevation of a solid prism are drawn on a centimetre grid.

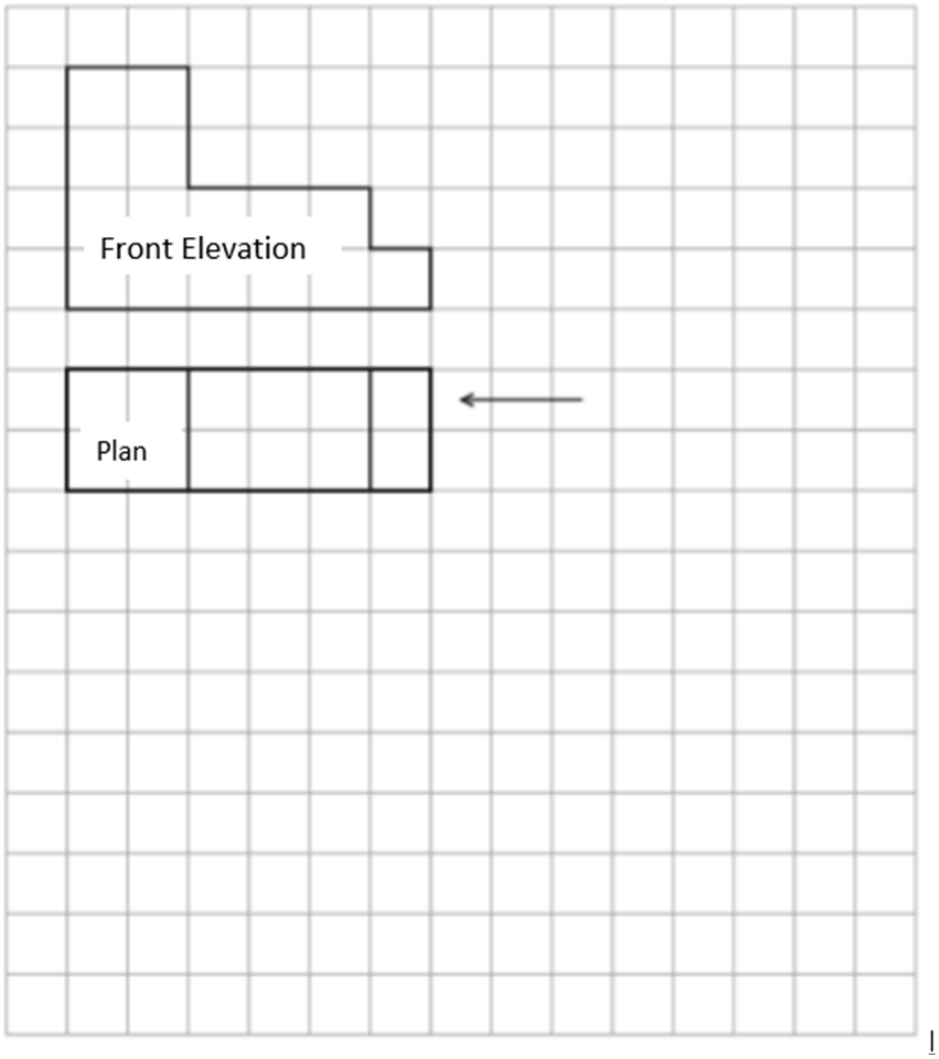


In the space below, draw a sketch of a solid prism.
Write the dimensions of the prism on your sketch. (2)

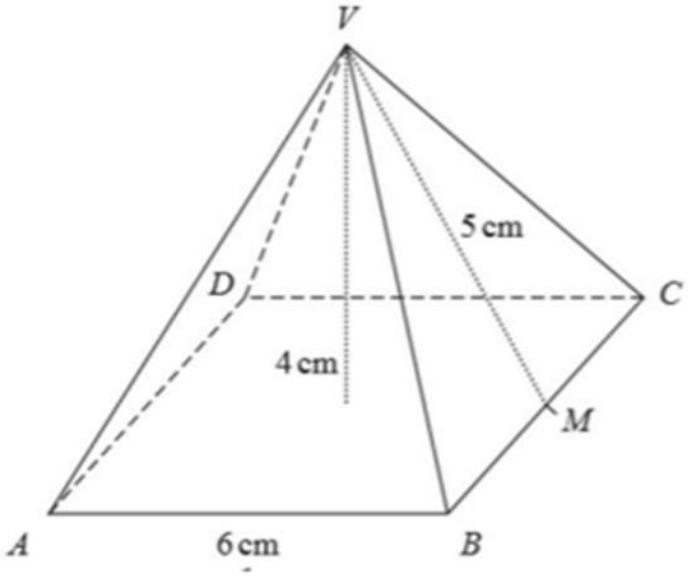
4) PP – GCSE – 2F – Q27

The front elevation and plan of a solid are shown on the grid.

On the grid, draw the side elevation from the direction of the arrow. (2)



5) GCSE – Jun



Front view

The base of the pyramid is a square of side 6cm.

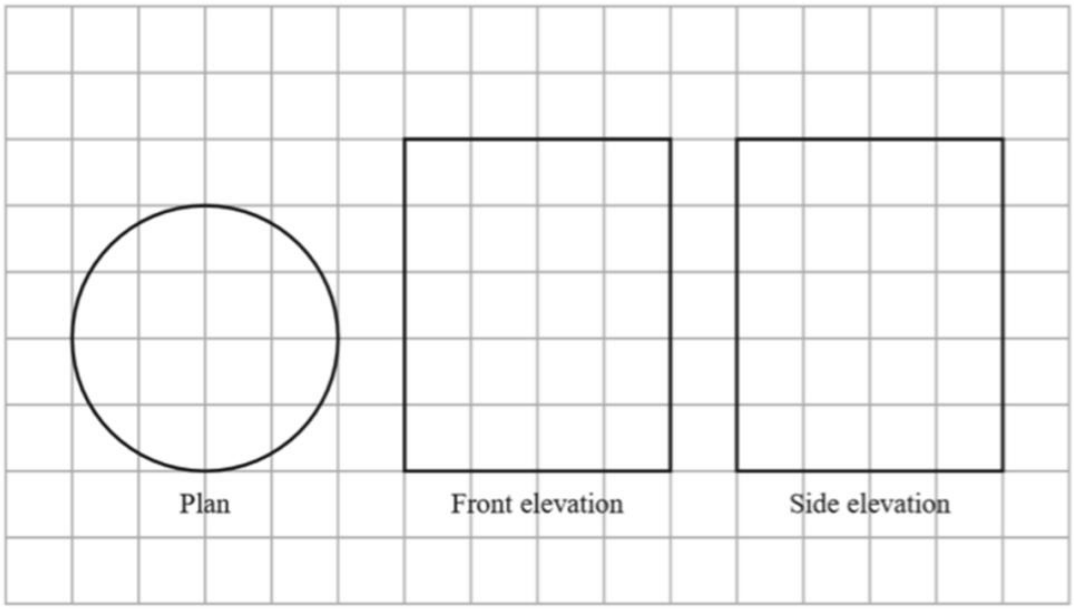
The height of the pyramid is 4 cm.

M is the midpoint of *BC* and *VM* = 5 cm.

(a) Draw an accurate front elevation of the pyramid from the direction of the arrow.(2)

6) GCSE– June 2019- 1F - Q25

The diagram shows the plan, front elevation and side elevation of a solid shape, drawn on a centimetre grid.

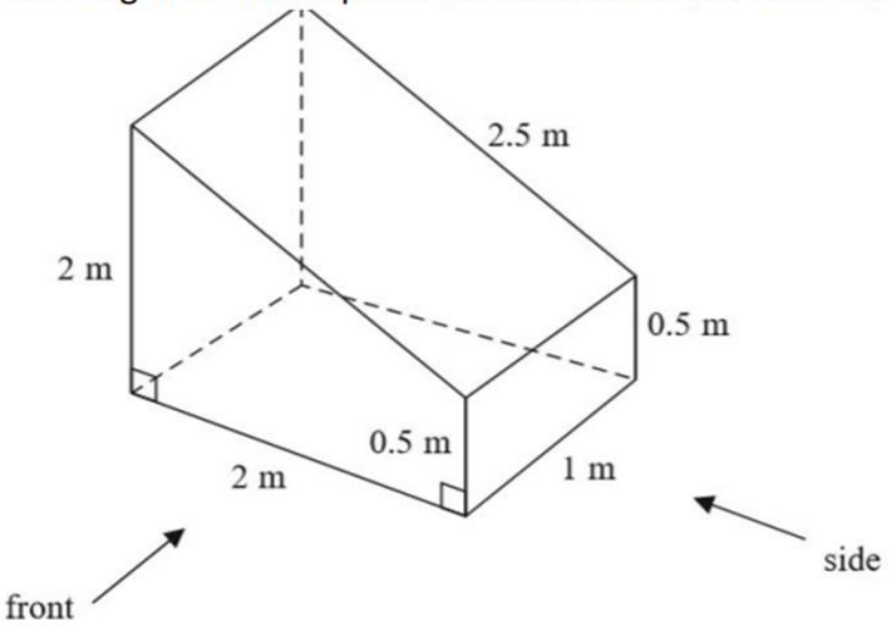


In the space below, draw a sketch of the solid shape.

Give the dimensions of the solid in your sketch. (2)

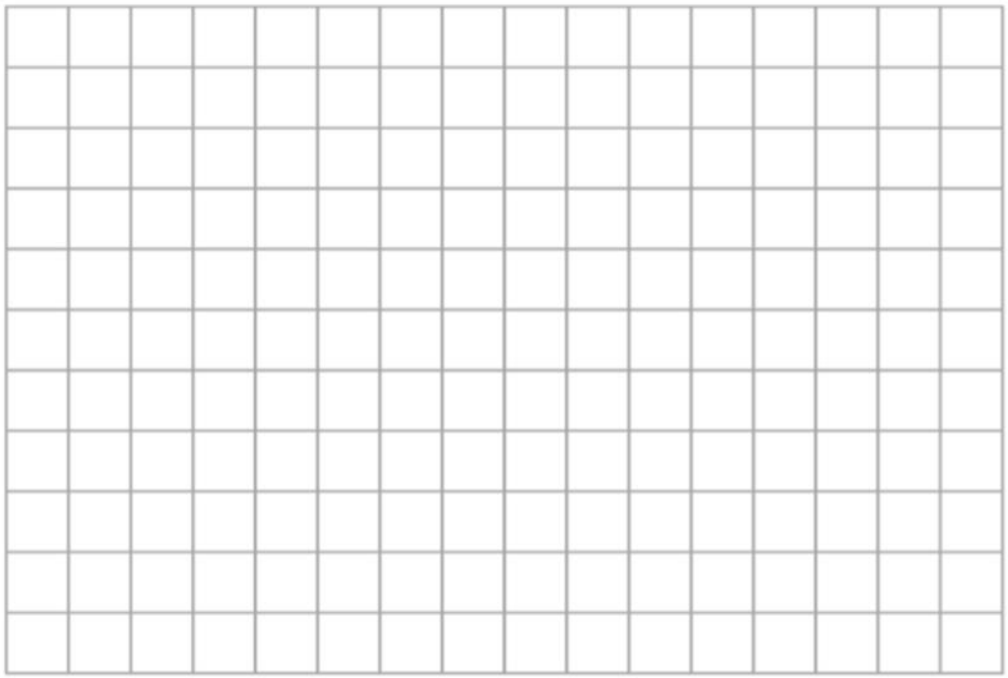
7) GCSE – June 2017 – "F – Q 19

The diagram shows a prism with a cross section in the shape of trapeziur



On the centimetre grid below, draw the front elevation and the side elevation of the prism.

Use a scale of 2 cm to 1 m. (4)



Notes

Averages

Calculator questions

1) The table below shows the exact number of likes received in the first 5 weeks of 2018

Week	1	2	3	4	5
Number of likes	2341	6310	3129	5128	4357

Laypin thinks the mean weekly number of likes in these 5 weeks is more than 4000.

(3)

Is Laypin correct?

Show your working and answer in the box

2) Adam works for a car trading company.
He has this information about the number of cars sold by the company in the first six months of 2017.

Month	Jan	Feb	Mar	Apr	May	Jun
Numbers of cars sold	31	28	46	52	44	62

Adam says
'The mean number of cars sold each month in this period was more than 42.
The number of cars sold in June 2017 was more than $\frac{1}{5}$ of the number of cars sold from the beginning of January to the end of June.'

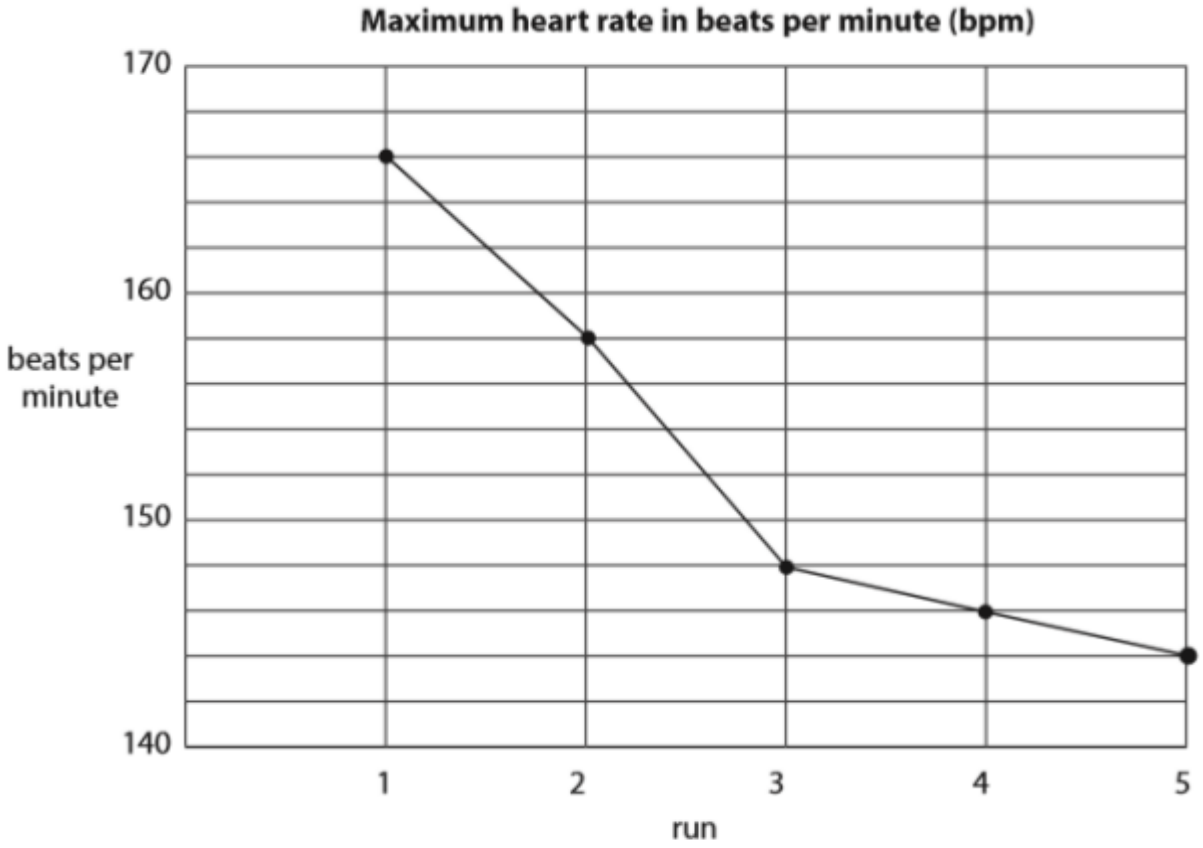
(4)

Is Adam correct?

Show why you think this is.

3) Bradley is a member of a fitness club.
He plans to take part in a race.
Bradley does some training runs to prepare for the race.

He has this information about his maximum heart rate during each run.



Bradley thinks his mean maximum heart rate is greater than 150 beats per minute.

Is Bradley correct?

Show a check of your working in the box below

(4)

4) Enid owns some coffee shops.
Her coffee shops are open for 6 days each week.
Enid wants to find the average sales from each of her coffee shops.

The table below gives information about sales of coffee from her coffee shop in London for one week.

Day	Mon	Tue	Wed	Thu	Fri	Sat
Number of cups of coffee sold	225	188	208	241	222	320

a) Work out the average number of cups of coffee sold per day for Enid
Show a check of your working

(3)

b) Enid wants to know how the number of sales vary in her coffee shops.

She uses this formula to measure how sales vary.

$$V = \frac{100R}{M}$$

R is the range of sales

M is the mean of sales

V is the measure of how sales vary (%)

The table gives information about sales of coffee from her coffee shop in Birmingham for one week.

Day	Mon	Tue	Wed	Thu	Fri	Sat
Number of cups of coffee sold	190	218	312	280	175	325

The mean number of sups sold in the Birmingham coffee shop is 250.
Enid thinks that the value of V for this coffee shop is less than 50%.

(4)

c) Is Enid correct?

Show why you think this.

For her Derby coffee shop, Enid uses the formula to work out the value of V using figures for:

One week of Sales

One Month of sales

d) Which value of v is the most reliable (2)

Give a reason for your answer

5) Petra works for a train company.

She writes a report for her manager.

The table shows the number of passengers who used a train station last week.

Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Number of passengers	29 500	28 700	23 100	21 800	29 400	20 700	13 400

Work out the mean daily number of passengers who used the train last week (3)

Show a check of your answer

6) in a survey of 36 families, the number of people in each family was recorded.

The table shows the results.

Number of people in the family	Frequency
1	3
2	2
3	7
4	13
5	11

(3)

Work out the mean number of people in these families.

Show a check of your answer.

7) Cindy asked a collection of people how many hours they spent playing video games in the last week.

Her results are shown in the table below.

Playing time, t (hrs)	Frequency, f
$0 < t \leq 4$	12
$4 < t \leq 8$	18
$8 < t \leq 12$	19
$12 < t \leq 16$	6
$16 < t \leq 20$	2

Estimate the mean number of hours spent playing video games from Cindy's sample
[4 marks]

8) The grouped frequency table shows data on the weights of 117 cats.

Calculate an estimate for the mean weight of the cats. [4 marks]

Weight, w (kg)	Frequency, f
$2 < w \leq 3$	22
$3 < w \leq 3.5$	14
$3.5 < w \leq 4$	39
$4 < w \leq 4.5$	29
$4.5 < w \leq 6$	13

Notes

Probability

Non calculator questions

1) There are 12 counters in a bag.

3 of the counters are red.
1 of the counters is blue.
2 of the counters are yellow.
The rest of the counters are green.

Caitlin takes at random a counter from a bag.

Show that the probability that this counter is yellow or green is $\frac{2}{3}$. (3)

2) The probability that a new fridge has a fault is 0.015.

What is the probability that a new fridge does **not** have a fault? (1)

3) A marble is going to be taken at random from a box of marbles.

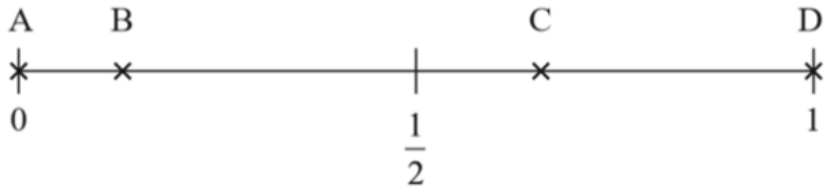
The probability that the marble will be silver is 0.5.

There must be an even number of marbles in the box.

(b) Explain why. (1)

4) Here is a probability scale.

It shows the probability of each of the events A, B, C and D.



(a) Write down the letter of the event that is certain. (1)

(b) Write down the letter of the event that is unlikely. (1)

Calculator questions

1) A band is promoting their upcoming concert tour.

Everyone who downloaded the band's latest album was entered into a prize draw.

Prize Draw Rules

- 2% of all entrants will win a prize.
- Prizes include signed photographs band T-shirts and concert tickets.
- The prize that each winner receives is chosen at random.

A total over 5500 people entered into the draw and 22 people won a concert ticket.

Vicky is one of the people who wins a prize.

What is the probability that Vicky's prize is not a concert ticket?

Give your answer as a fraction in its simplest form. (4)

2) The table shows the probabilities that a biased dice will land on 2, on 3, on 4, on 5 and on 6.

Number on dice	1	2	3	4	5	6
Probability		0.17	0.18	0.09	0.15	0.1

Neymar rolls the biased dice 200 times.

Work out an estimate for the total number of times the dice will land on 1 or on 3. (3)

3) There are only blue cubes, yellow cubes and green cubes in a bag.
There are twice as many blue cubes as yellow cubes

and four times as many green cubes as blue cubes.

Hannah takes at random a cube from the bag.
Work out the probability that Hannah takes a yellow cube. (3)

4) There are some counters in a bag.
The counters are red or white or blue or yellow.

Bob is going to take at random a counter from the bag.

The table shows each of the probabilities that the counter will be blue or will be yellow.

Colour	red	white	blue	yellow
Probability			0.45	0.25

There are18 blue counters in the bag.
The probability that the counter Bob takes will be red is twice the probability that the counter will be white.

(a) Work out the number of red counters in the bag. (4)

5) Mrs Jenkins is organising a charity raffle.

She sells 300 tickets for £3 each.

The probability that someone wins a prize is 0.2

Each prize costs £ 8

The profit is donated to two Charities, Shelter A and B in the ratio of 2:5

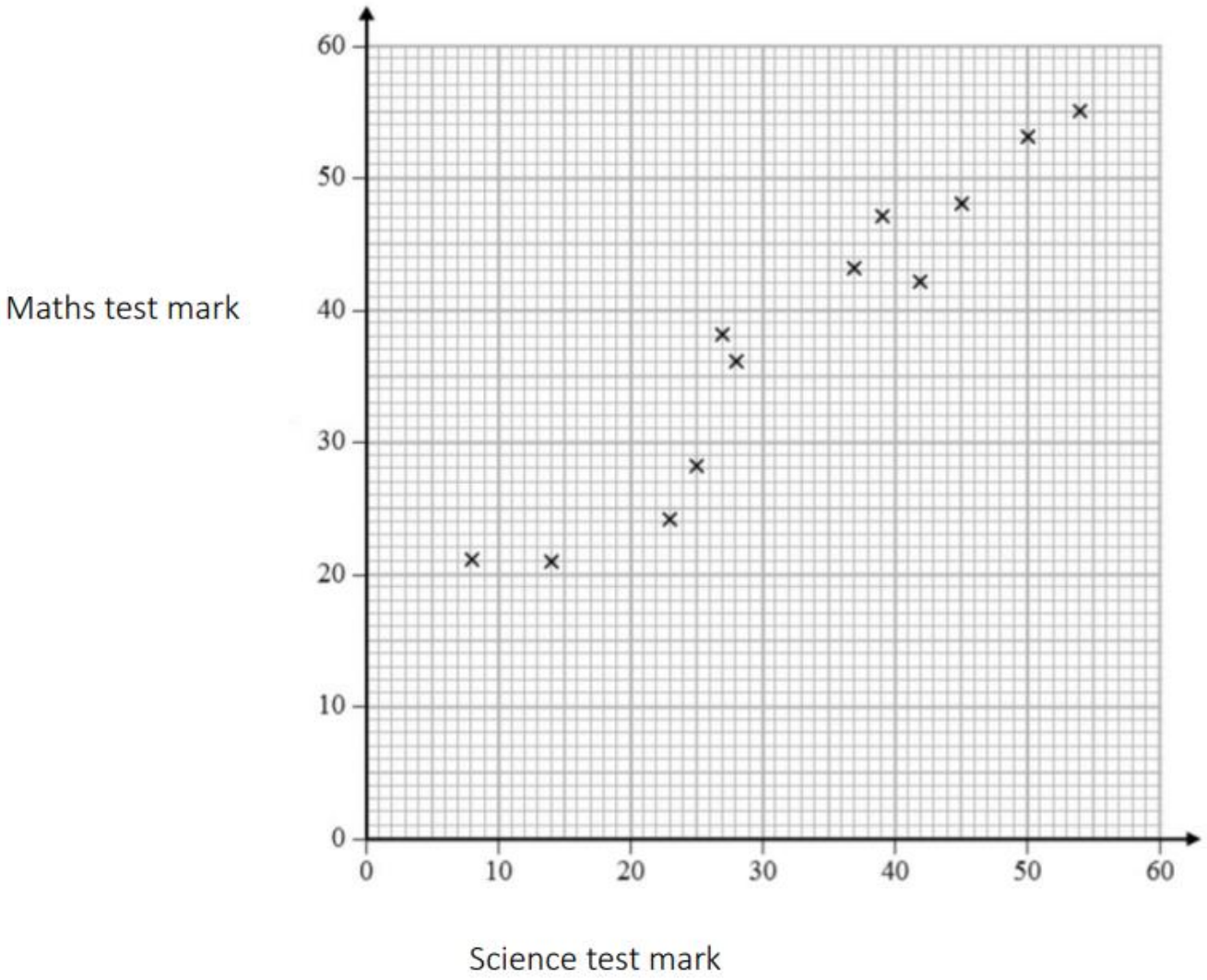
How much money will Shelter B receive?

Notes

Scatter Diagrams

1) GCSE November 2019- 3F – Q24

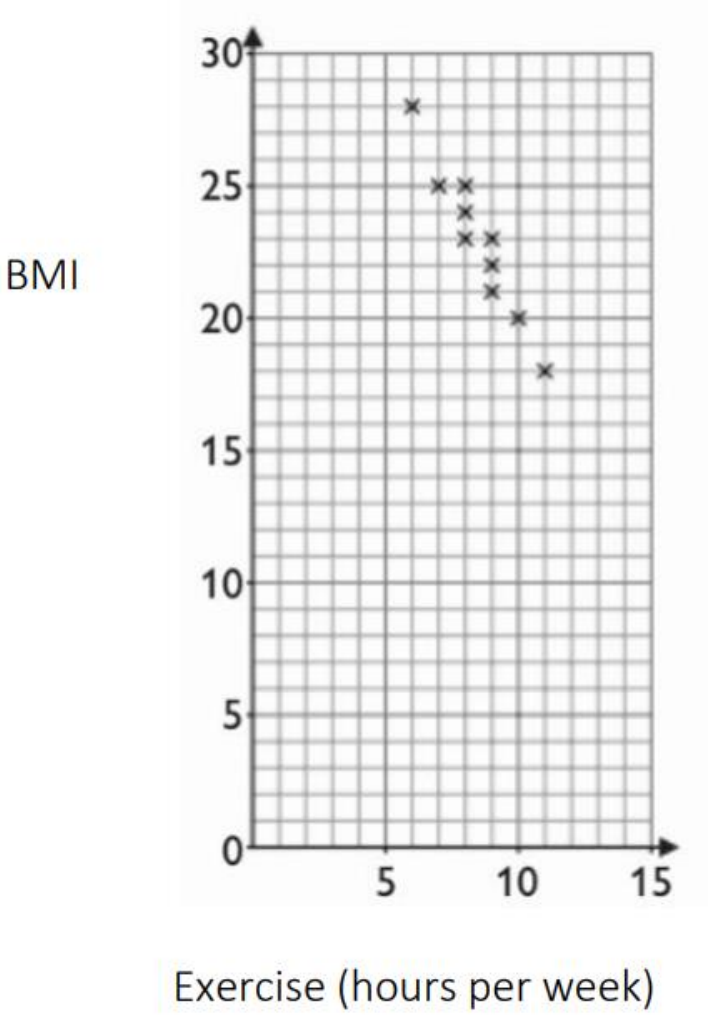
The scatter graph shows information about the marks a group of students got in a Science test and in Maths test.



Jamie got a mark of 34 in the Science test.

Using the scatter graph, find an estimate for Jamie's mark in the Maths test. (2)

2) Jane works at a leisure club. She asks a group of members how many hours of exercise they each do per week and also records their body mass index (BMI).
The scatter diagram shows this information.



(a) Draw a line of best fit on the scatter diagram.

(1)

The formula below is used to calculate body mass index.

$$\text{BMI} = \frac{Weight\ (Kg)}{(Height\ (m))^2}$$

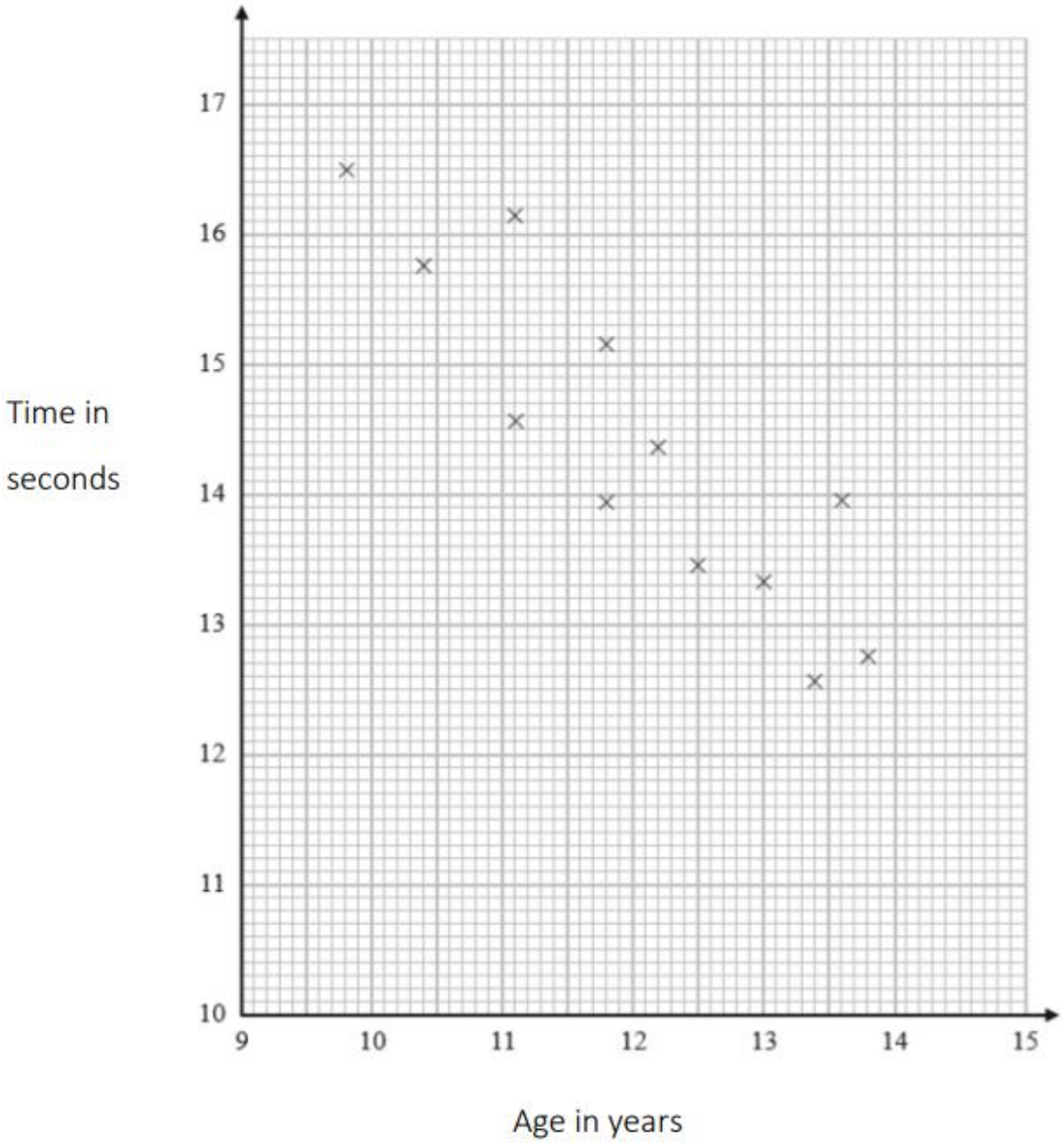
Jane's weight is 56 kg and she is 1.6 m tall.

(b) Use the line of best fit to predict how many hours of exercise Jane does per week.

(2)

hours

3) The scatter diagram shows information about 12 girls.
It shows the age of each girl and the best time she takes to run 100 meters.



(a) Write down the type of correlation. (1)

Kristina is 11 years old.

Her best time to run 100 meters is 12 seconds.

The point representing this information would be an outlier on the scatter diagram.

(b) Explain why. (1)

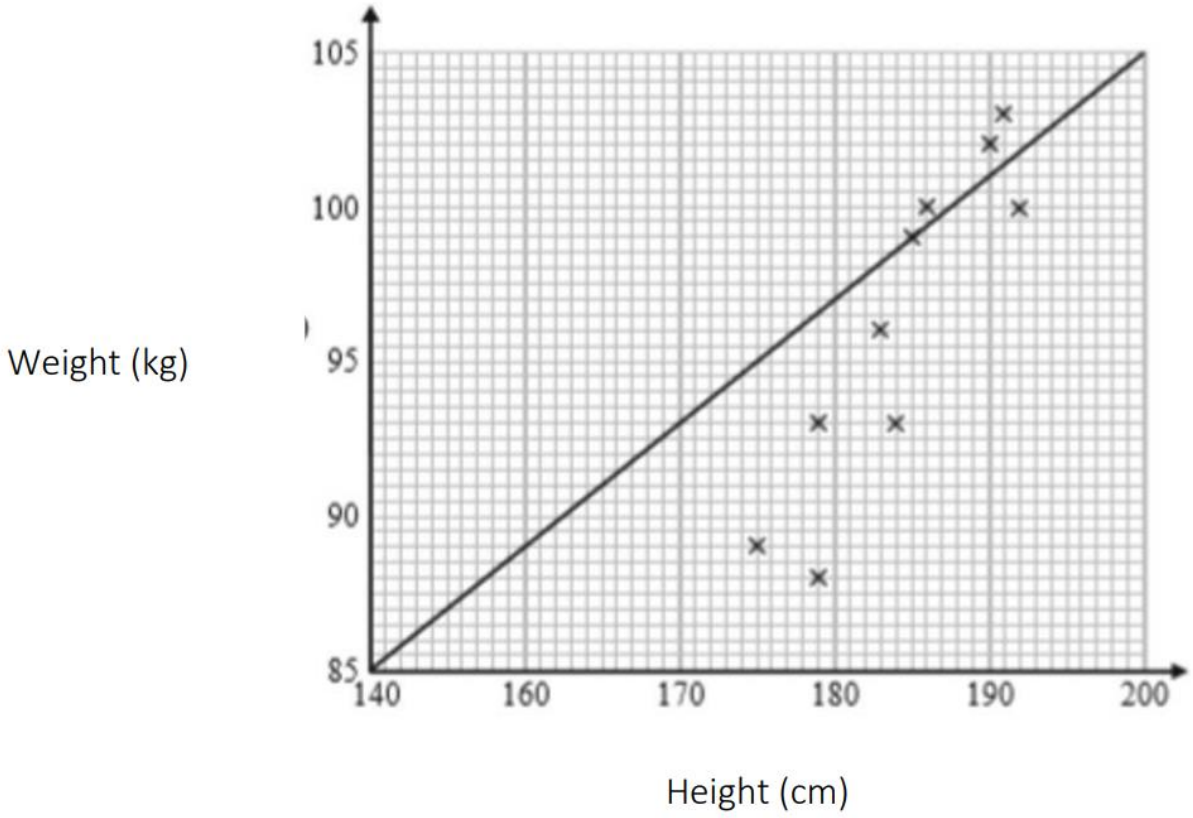
Debbie is 15 years old.

Debbie says,

''The scatter diagram shows I should take less than 12 seconds to run 100 meters.

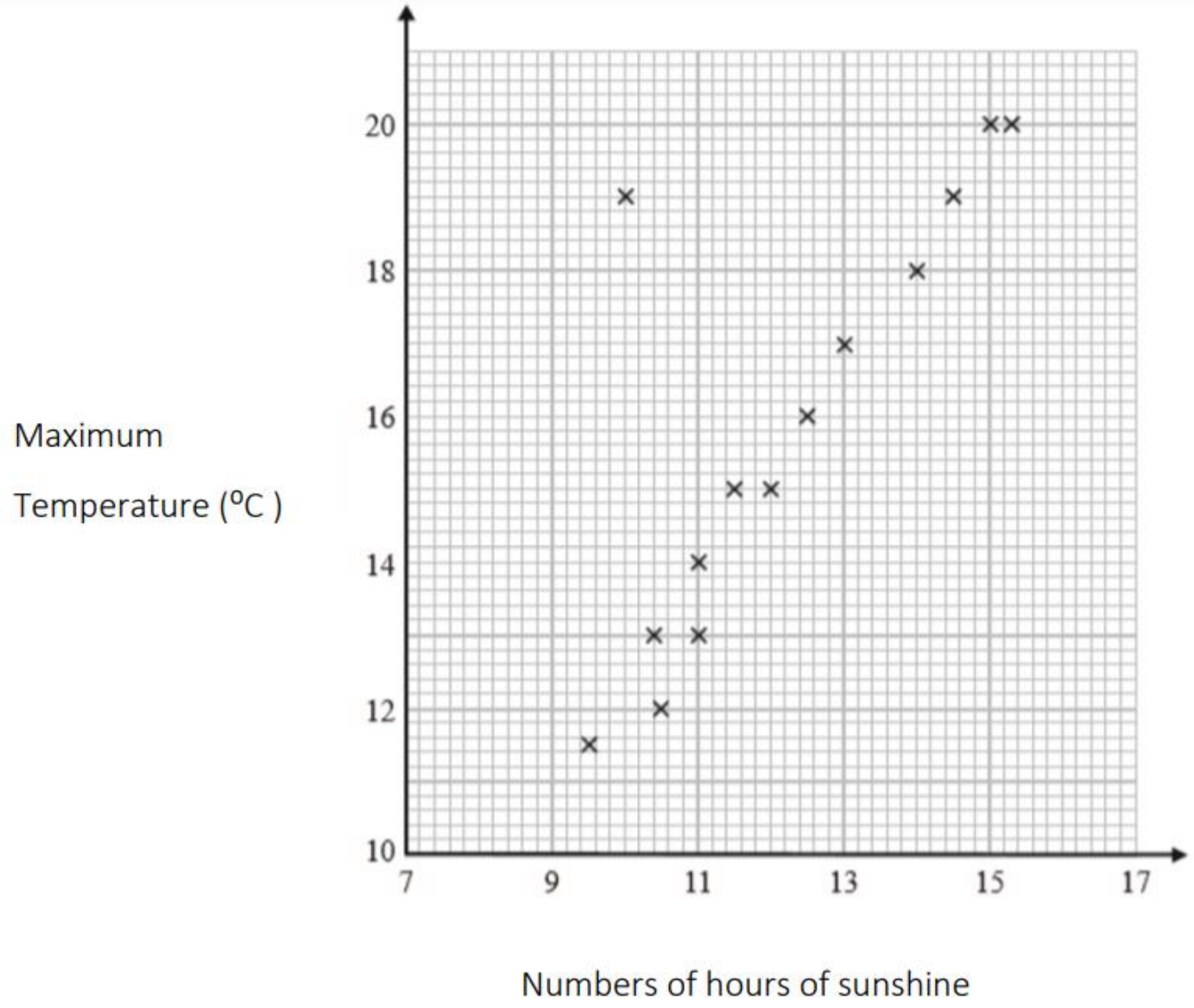
(c) Comment on what Debbie says.

4) Sean has information about the height, in cm, and the weight, in kg, of each of ten rugby players.
He is asked to draw a scatter graph and a line of best fit for this information.
Here is his answer.



Sean has plotted the points accurately.
Write down two things that are wrong with his answer. (2)

5) The scatter graph shows the maximum temperature and the number of hours of sunshine in fourteen British towns on one day.



One of the points is an outlier.

(a) Write down the coordinates of this point. (1)

(_____ , _____)

(b) For all the other points write down the type of correlation. (1)

On the same day, in another British town, the maximum temperature was 16.4°C.

(c) Estimate the number of hours of sunshine in this town on this day. (2)

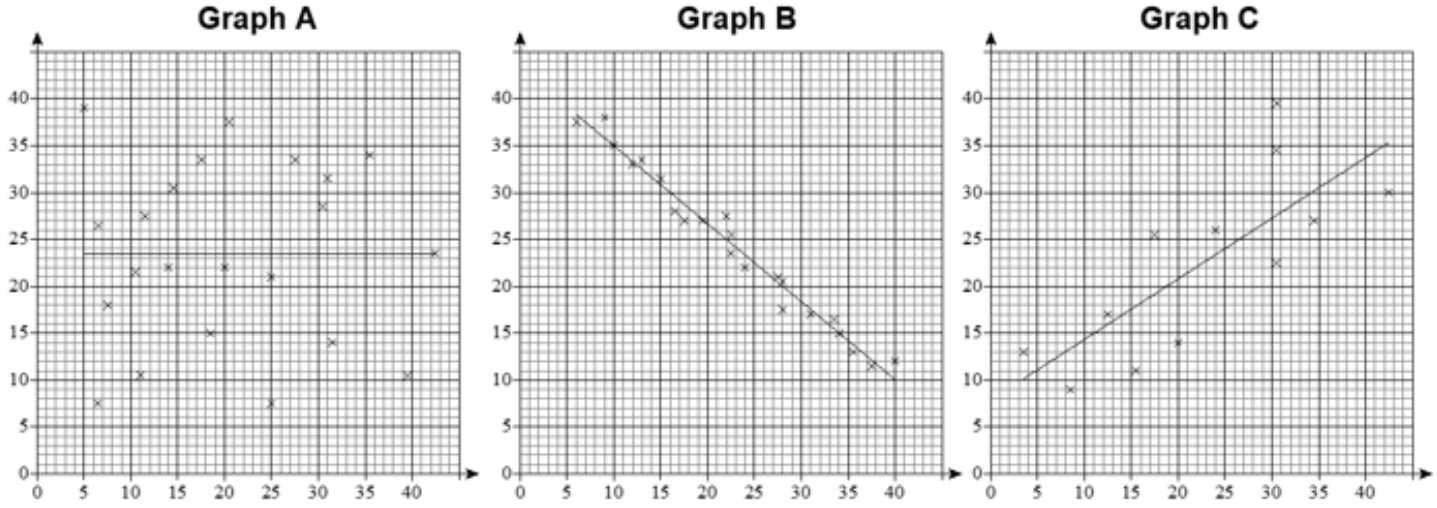
_____ hours

A weatherman says,

''Temperatures are higher on days when there is more sunshine.''

(d) Does the scatter graph support what the weatherman says?
Give a reason for your answer. (1)

6) Here are three scatter graphs.



a) Which graph has the strongest correlation ? (1)

b) On which graph should a line of best fit not be drawn ? (1)

Notes

QR Codes

Percentage of Amount

Percentage Change

Reverse Percentages

Compound interest

Best Buys

Exchange rates

Basic Area

Area of Compound

Surface Area

Volume

Angles in a Triangle

Basic Perimeter

Averages

Probability

Probability Tables

Scatter Graphs

Pie Charts

Frequency Tables

Speed & Density

Similar Shapes