

First Name	
Last Name	
Date	
Total Marks	/ 100 marks



GCSE Mathematics
Calculator
Foundation Tier
Free Practice Set 5
1 hour 30 minutes



Answers at:

<http://www.mathsmadeeasy.co.uk/gcsemathspapers-free.htm>

Instructions

Write your name and other details in the boxes above.
Answer all the questions
Take π to be 3.142

Information

Marks are shown in brackets for each question (2)
Calculators may be used

Advice

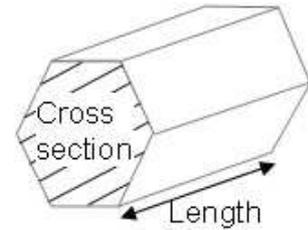
Don't spend too long on one question
Show all your working in calculations for full marks
You will get marks for method even if your answer is incorrect
Leave a question until later if you cannot answer it

Materials needed for examination

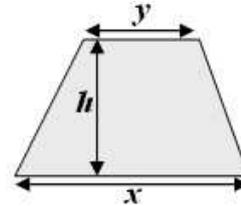
Ruler marked in centimetres and millimetres,
protractor, compasses, pen, pencil, rubber
Tracing paper may be used

Formulae Sheet

Volume of prism = area of cross section \times length



Area of trapezium = $\frac{1}{2}(x + y)h$



Authors Note

Every possible effort has been made to ensure that everything in this paper is accurate and the author cannot accept responsibility for any errors.

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1. Look at the scale below



Make a mark on the scale at the following values.

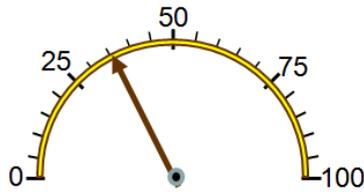
a) 1.5 and label it A

(1)

b) 2.25 and label it B

(1)

Look at the scale below.

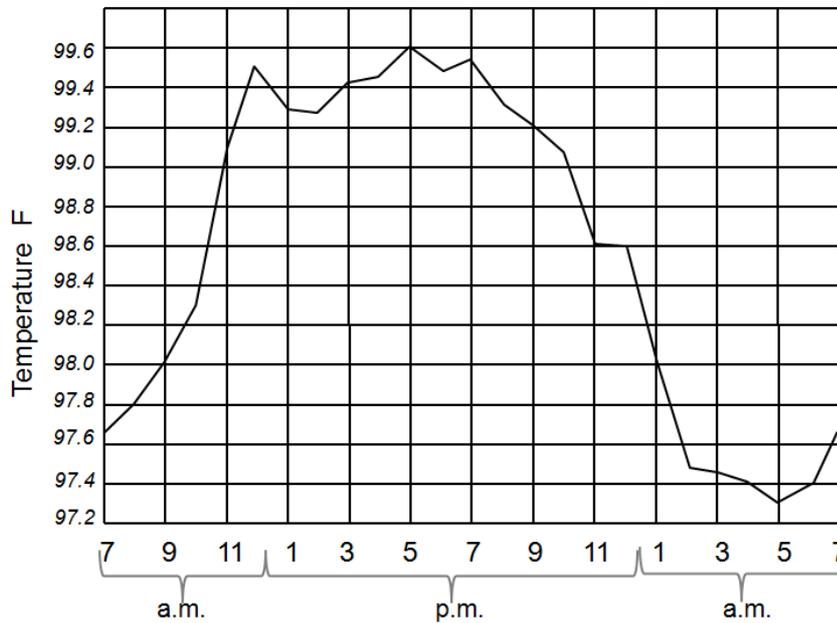


c) Write down the reading on the scale.

.....

(1)

2. The graph shows the change in human body temperature over one day



a) What was the temperature at 10am

..... °F

(1)

b) What is the range of temperatures.

..... °F

(2)

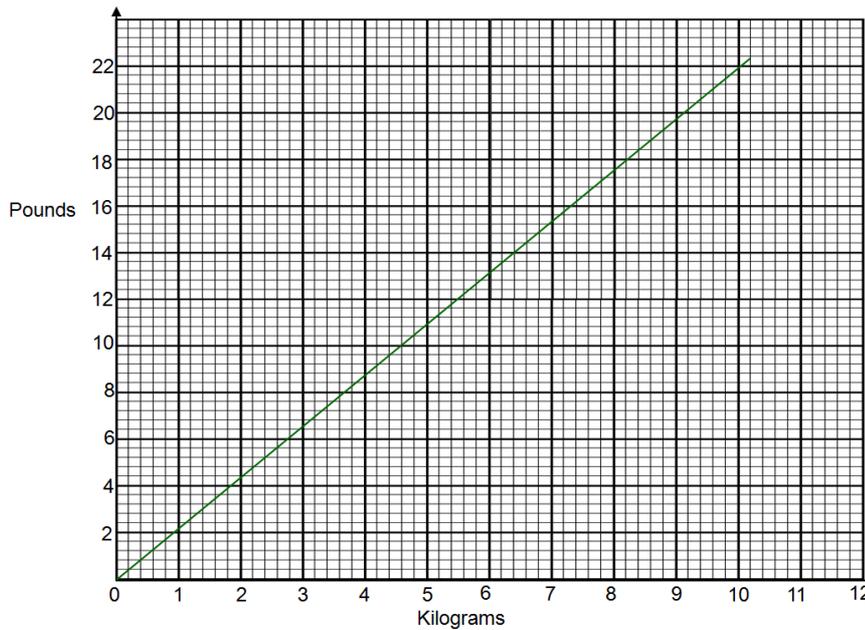
3. Look at the numbers below

5	6	7	8	11	24	49
---	---	---	---	----	----	----

Which number is

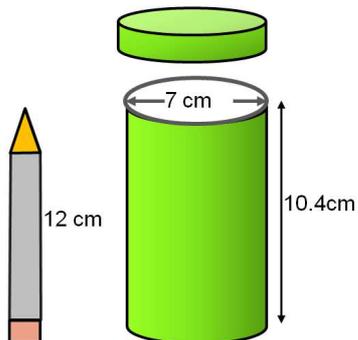
- a) a multiple of 12 (1)
- b) a factor of 21 (1)
- c) a square number (1)
- d) square root of 36 (1)

4. The conversion graph is used to change between pounds and kilograms



- a) Use the graph to change 5 kilograms into pounds
..... pounds (1)
- b) What is 40 pounds in kilograms
..... kg (1)
- c) What is 100 kilograms in pounds
..... pounds (1)

5. Sylvia had a pencil-case in the shape of a cylinder with the dimensions shown. The pencil case had a tight top that fitted snugly. She wanted to put a 12 cm pencil in her pencil-case.



- a) Work out if the pencil will fit in the pencil-case diagonally with the top on. Ignore the width of the pencil. Show all your working

(3)

6. Parminder bought some supplies from the Cash and Carry.

Complete her bill:

Cash and Carry store			
Description	Number	Cost of each item	Total
Bottles of orange juice	9	£1.20	£10.80
Packets of crisps	£0.27	£ 4.05
Pair of Jeans	3	£.....	£34.50
Pair of socks	3	£1.54	£
Total cost			£.....

(4)

7. The formula below converts temperature in degrees Centigrade to degrees Fahrenheit

$$F = \frac{C \times 8}{5} + 32$$

F = temperature in Fahrenheit
C = temperature in Centigrade

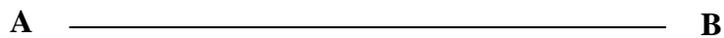
a) Use the formula to convert 90° C to °F

..... °F (3)

b) David measured the temperature of some water. It was 128° F.
Calculate the temperature in °C

..... °C (3)

8. A horizontal line AB is drawn below



a) Using a compass and pencil construct an angle of 60° at point A

(2)

9. A shop pays all its workers the minimum national wage (MNW) set by the government.

There are different levels of MNW, depending on your age.
The current rates (from 1 October 2011) are:

£6.08 - the main rate for workers aged 21 and over

£4.98 - the 18-20 rate

£3.68 - the 16-17 rate for workers above school leaving age

a) Josh is 16 and Olivia is 18. They both work in the shop on Saturday from 9am to 4pm.

How much more will Olivia get than Josh

£..... (4)

10. Using your calculator work out

a) $\frac{12.6}{3} + 8.4$

..... (1)

b) $\frac{8.3^2 - 2}{5}$

Give your answer to one decimal place

..... (2)

11. a) Using the equation shown below, complete the table of values.

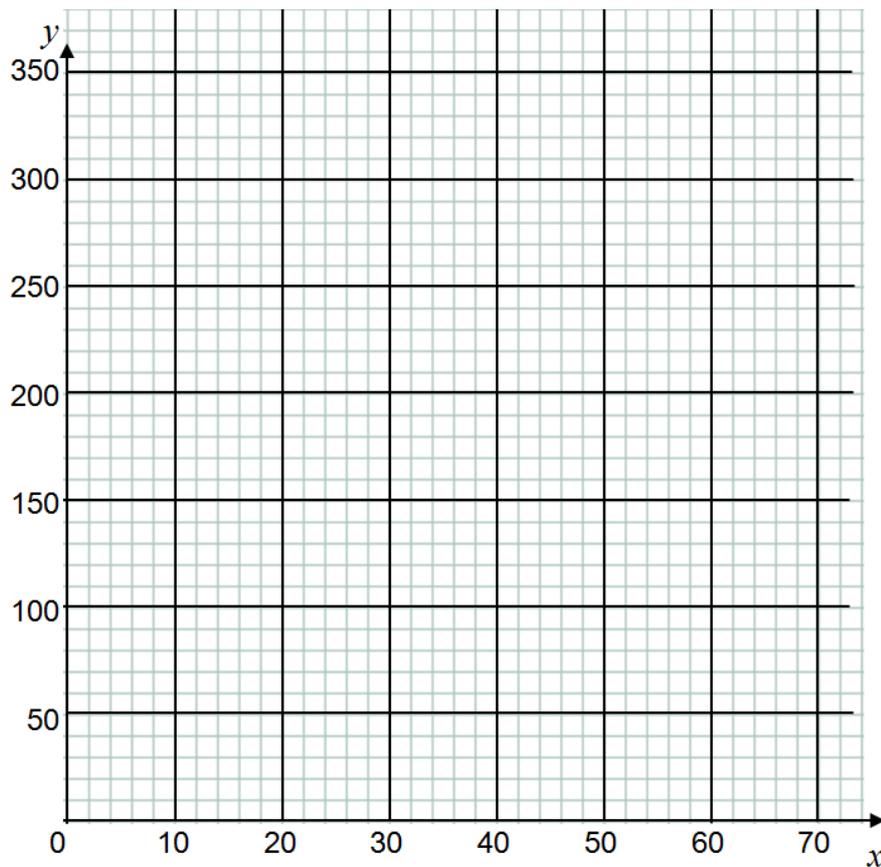
$$y = x \left(\frac{x}{20} + 1 \right)$$

x	0	10	20	30	40	50	60
y	0	15		75	120		240

(1)

- b) Plot the co-ordinates on the graph paper below and join up the points

(2)



The stopping distance S (in feet) of a car is calculated using this formula :

$$S = \frac{x^2}{20} + x$$

x is the speed in mph.

- b) Using the graph estimate the *stopping distance* S for a car with a speed of 45mph

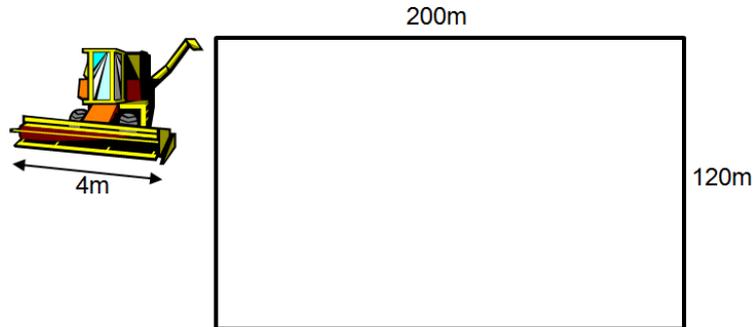
.....feet

(2)

12. A farmer needed to harvest the crops in a field.

The field was 200m by 120m

The farmer used a combine harvester with a blade cutting width of 4m for each cut *across* the field



a) How many cuts would the farmer need to make to harvest the field

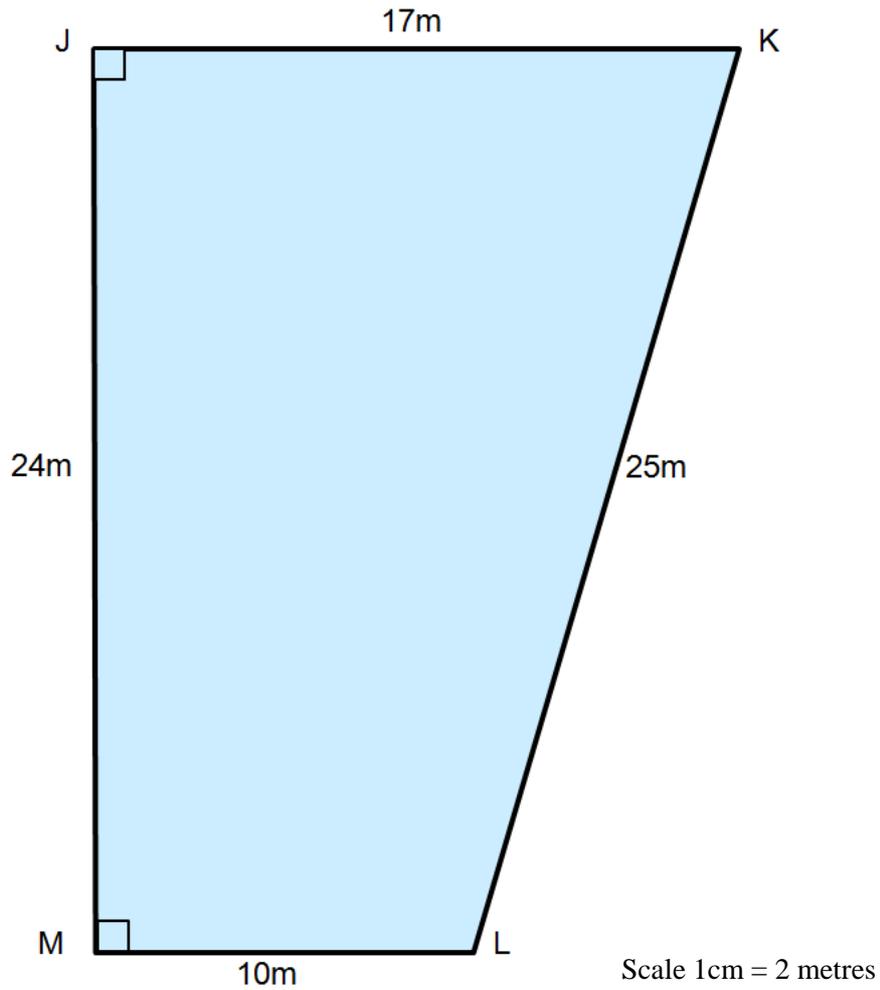
..... cuts (2)

The combine harvester had a speed of 4.8km per hour.

b) How long would it take the farmer to harvest crops in the field.
Give your answer in hours and minutes

..... hr min (3)

13. A plan of the swimming pool is shown below.



a) Calculate the area of the swimming pool

.....m² (2)

One area of the pool is for toddlers to paddle and another area is for adults only.

The toddlers paddling area is within 5 metres of the corner J

The adult area is within 4 metres of the side ML

b) Draw these two areas accurately on the plan.

(4)

14. Matt's looked at his yearly income statement below and noticed some values were missing.

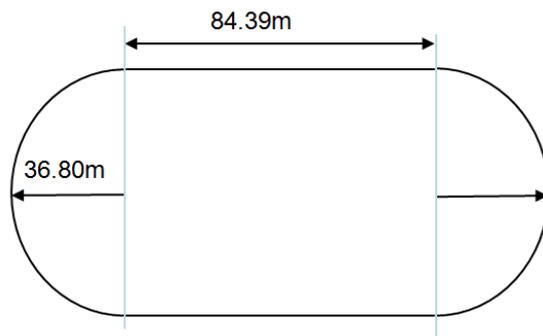
Yearly income report: Matt M. Easy	
Employee No: 123456 Tax Code: 747L	
	Gross pay £ 2 3 0 0 0 . 0 0
a)	Taxable Pay £
b)	Income Tax £
	NI £ 1 8 9 2 . 6 4
c)	Total Deductions £
d)	Net Pay £

His taxable pay is worked out using the tax code 747L.
 This means, he is doesn't have to pay tax on £7475 of his gross pay.

Use the following formula to complete Matt's income statement

- a) Taxable Pay = Gross Pay – £7475.
 Work out Matt's Taxable Pay and enter it above. (1)
- b) Matt's Income tax is 20% of his Taxable Pay.
 Work out Matt's Income tax and enter it above. (2)
- c) Matt's Total Deductions = Income Tax + NI (national Insurance)
 Work out Matt's Total Deductions and enter it above. (1)
- d) Net Pay = Gross pay – Total deductions.
 Work out Matt's Net Pay and enter it above. (1)
- e) What percentage of his gross pay is deducted. (1)
-% (1)

16. In 2012, the United Kingdom hosted the Olympic Games in London.
The standard running track is shaped like this:



The standard running track is made from two semi-circles at each end joined by two straights.

For the inside running lane, the radius of each circle is 36.80m and the two straights are 84.39m each as shown below.

- a) Calculate the area of the running track.
Give your answer to nearest whole number

.....m² (4)

- b) Show that the perimeter of the running track is 400m.

(4)

The Olympic Marathon is over 42 kilometres long.
A runner can lose over $3\frac{1}{2}$ litres of sweat during a marathon.

This water must be replaced and so cups of water are handed out along the race.
Each cup holds $\frac{1}{8}$ litre.

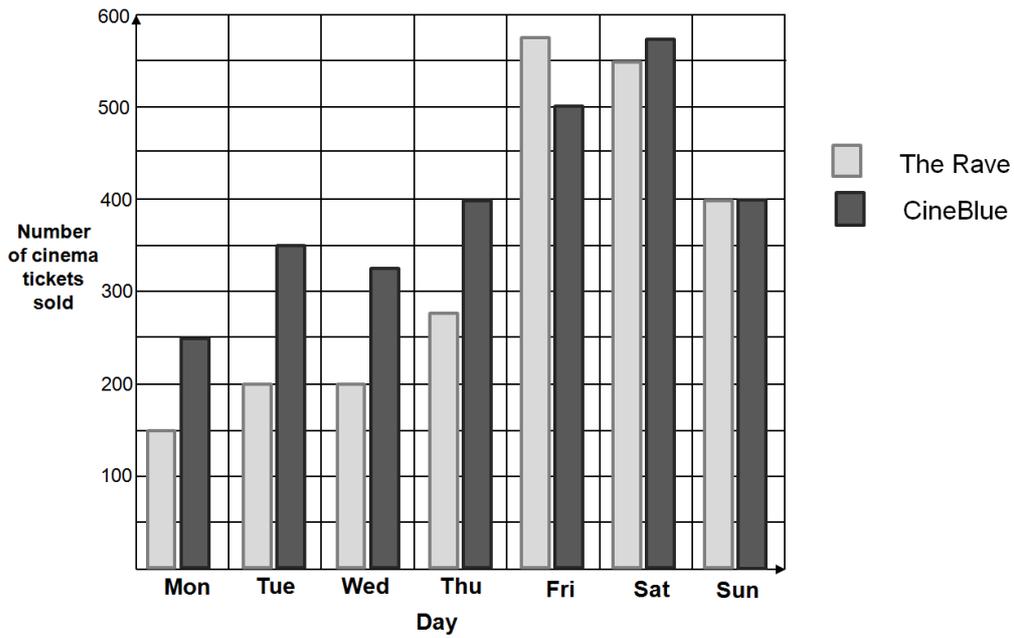
- c) How many cups of water should a runner drink during the race?

..... cups (2)

- d) After drinking *one litre* of water approximately how far would a runner have gone. Give your answer to the nearest km.

..... km (1)

17. The chart shows the number of cinema tickets sold at two cinemas in a week



a) On which day were the same number of tickets sold at both cinemas

..... (1)

b) What was the total number of tickets sold at the Rave at the weekend

..... (1)

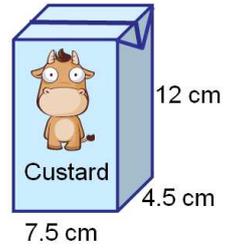
c) Work out the mean number of tickets sold at CineBlue for the seven days

..... (2)

d) The normal ticket price is £5.40 at CineBlue
 On a Thursday CineBlue has a special offer – two for the price of 1
 How much money did CineBlue take on Thursday

£..... (2)

18. A carton of custard is in the shape of a cuboid as shown.
The carton measures 12 cm high, 7.5 cm wide and 4.5 cm deep.



- a) Work out the volume of the carton.

..... cm³ (2)

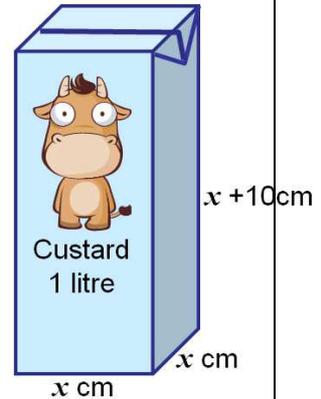
The custard company wants to design a new larger carton to hold 1000cm³ of custard.

The base of the carton is a square and the height is 10cm *more* than the width as shown.

The volume of a carton is given by

$$V = x^3 + 10x^2 \text{ where } x \text{ is the base width}$$

- b) Using trial and improvement work out x for a volume V of 1000cm³
Give your answer to one decimal place.
You must show **all** your working.



$x = \dots\dots\dots$ cm (4)

Laura wants to make her own custard.
She uses the recipe below for 4 people

- 300ml milk
- $\frac{1}{2}$ tea spoon vanilla extract
- 2 eggs, yolks only
- 15 grams sugar

d) How much milk would she need to make custard for 10 people

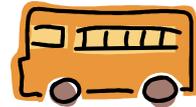
..... ml (2)

How much vanilla essence would she need to make custard for 2 people
Give your answer as a fraction

..... tea spoon (1)

19. A group of 16 university students hired a mini-bus for the day.

The mini-bus cost £40 per day plus an extra charge for mileage.

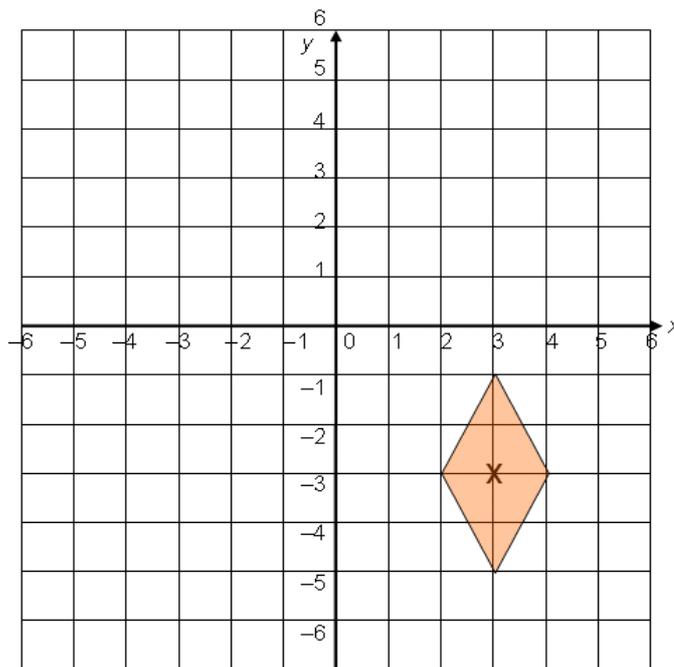


Between 0-100 miles this was 82p per mile and above 100 miles it was 41 p per mile.
The mileage reading at the start of the trip was 32, 863 and 33, 050 at the end of the trip.

Each student paid £10. How much profit or loss did the trip make?

£..... (4)

20. Rotate shape **X** by 90° clockwise about the origin (0, 0). Label it shape Y



(3)

21. Cyril had a pack of 48 playing cards.

Each card in the pack was either black or red with a circle, square, triangle or rectangle symbol. The table below shows this information.

Symbol	Circle	Square	Triangle	Rectangle
Colour	Black	Black	Red	Red
Number of cards	10	11	14	13

(1)

(1)

Cyril picked one card at random.

- a) What was the chance of picking a card with a triangle symbol
Give your answer as a fraction in its simplest form

.....

- b) A black card was picked. What is the probability that it has a square symbol.

(1)

.....
Cyril took the circle cards from the pack. They were numbered 10 to 19.
He picked one card at random.

- c) What is the probability of picking a card with a prime number
-

Cyril had a different pack of 50 playing cards.

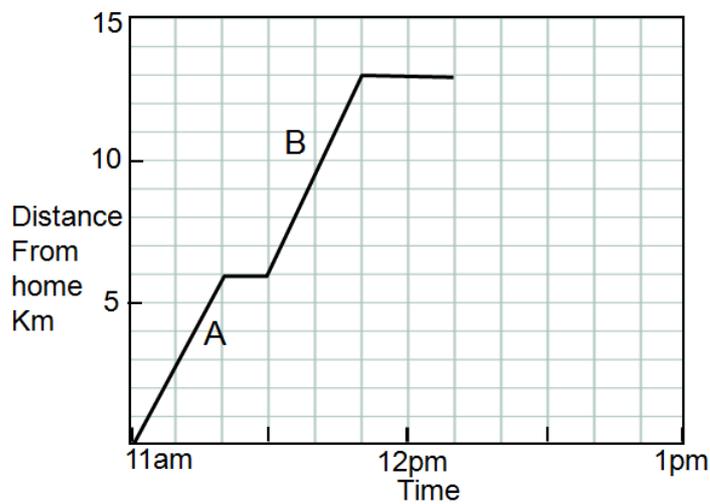
Each card in the pack was either green or blue with a circle, square, triangle or rectangle symbol. The table below shows the probability of picking a card.

Symbol	Circle	Square	Triangle	Rectangle
Colour	Green	Green	Blue	Blue
Probability of picking cards	$2x$	x	$3x$	$4x$

- d) How many **blue, triangle** cards were in the pack
-

(2)

22. The graph shows how far Gaynor travelled on her bike ride.
The first part of her journey was uphill.



- a) How many times did she stop for a rest?

..... (1)

- b) Calculate Gaynor's speed for the parts of the graph labelled A and B
Give your answer in kilometres per hour.

Akm/hr
Bkm/hr (2)

- c) At 12:10 Gaynor rode home downhill at a speed of 26 km per hour.
What time did she arrive home.

