LJH Mark Scheme completed

LJH Answers completed

Write your name here

Surname	Other names

Pearson Edexcel
Level 1 / Level 2
GCSE (9–1)

Centre Number | | | | | |

Candidate Number | | | | |

Mathematics

Paper 1 (Non-Calculator)

Foundation Tier

Thursday 25 May 2017 – Morning
Time: 1 hour 30 minutes

Paper Reference
1MA1/1F

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser. Tracing paper may be used.

Total Marks
80

HA022130130

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may not be used.**

Information

- The total mark for this paper is 80
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

P48134A

6/6/6/6/6/7/7/4/

P 4 8 1 3 4 A 0 1 2 0

Pearson

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Work out the value of 2^4

B1

16

(Total for Question 1 is 1 mark)

2 Write 7.264 51 correct to 3 decimal places.

B1

7.265

(Total for Question 2 is 1 mark)

3 (a) Simplify $7 \times e \times f \times 8$

A1

56ef

(1)

(b) Solve $\frac{x}{5} = 2\frac{1}{2}$ [×5

$x = 12\frac{1}{2}$

A1

$x =$ 12½

(1)

(Total for Question 3 is 2 marks)

4 Write $\frac{4}{5}$ as a percentage.

A1

80 %

(Total for Question 4 is 1 mark)

5 Work out 60% of 70

10% 7

70

60% 42

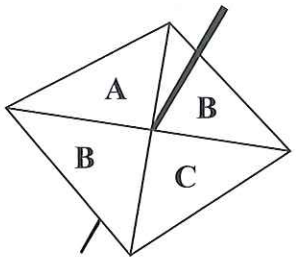
M1 find 10%
or "their 10%" × 6

A1

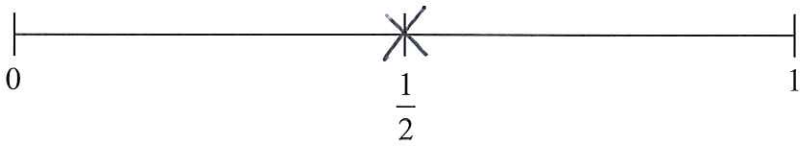
42

(Total for Question 5 is 2 marks)

6 Sammy spins a fair 4-sided spinner.



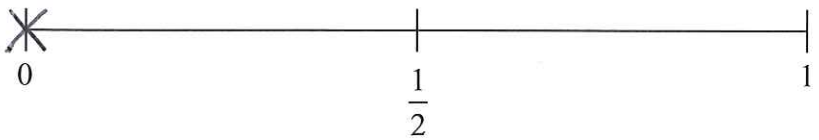
(i) On the probability scale, mark with a cross (×) the probability that the spinner will land on **B**.



B1

(1)

(ii) On the probability scale, mark with a cross (×) the probability that the spinner will land on **F**.



B1

(1)

(Total for Question 6 is 2 marks)

7 Fahima buys

2 packets of bread rolls costing £1.50 for each packet
1 bottle of ketchup costing £1.60
3 packets of sausages

2 x Bread £1.50
1 x ketchup £1.60
3 x Sausage

Fahima pays with a £10 note.
She gets 30p change.

Fahima works out that one packet of sausages costs £2.30

Is Fahima right?
You must show how you get your answer.

Bread £3.00
Ketchup £1.60
£4.60

P1 correct process to find total cost of bread and ketchup

£10 − "£4.60"
= £5.40

M1

∴ Sausages cost £5.10 since 30p change

"£5.10" ÷ 3 packets
= £1.70

1.70
3) 5.10

C1 Fahima is not right. A packet of sausages costs £1.70

(Total for Question 7 is 3 marks)

8 (a) Work out $\frac{5}{8} \times \frac{3}{4}$

A1

$\frac{15}{32}$

(1)

(b) Work out $\frac{2}{3} - \frac{1}{4}$

M1 finds a common denominator

$= \frac{8-3}{12}$

$= \frac{5}{12}$

A1

$\frac{5}{12}$

(2)

(Total for Question 8 is 3 marks)

9 Sean works for a company.
His normal rate of pay is £12 per hour.

£12/hr.

When Sean works more than 8 hours a day, he is paid overtime for each hour he works more than 8 hours.

>8 hrs overtime

Sean's rate of overtime pay per hour is $1\frac{1}{4}$ times his normal rate of pay per hour.

On Monday Sean worked for 10 hours.

Work out the total amount of money Sean earned on Monday.

P1 8 hours × £12/hr = £96

+ 2 hours overtime

$2 \times (1\frac{1}{4} \times £12)$ M1 oe correct method to find pay for overtime.

$= 2 \times (£15)$

$= £30$

Total "£96 + £30" M1 adds together

$= £126$

A1 cao

£ 126

(Total for Question 9 is 4 marks)

10 A farmer has 20 boxes of eggs.
There are 6 eggs in each box.

Write, as a ratio, the number of eggs in two boxes to the total number of eggs.
Give your answer in its simplest form.

eggs: 6 per box

eggs in two boxes : total eggs

12 : 120 M1

1 : 10

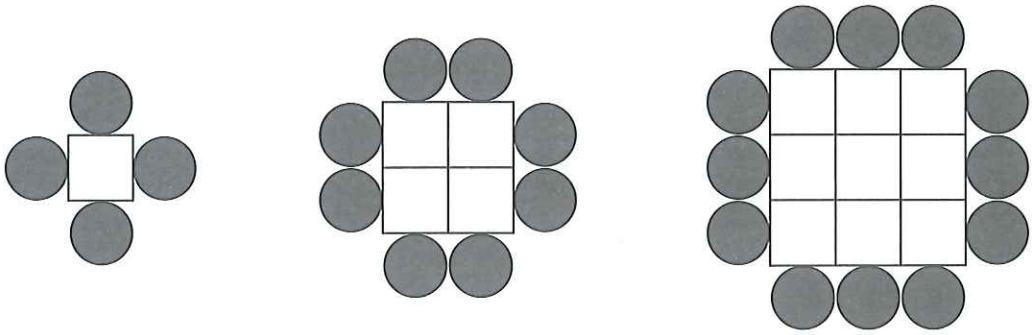
A1 cao

1 : 10

(Total for Question 10 is 2 marks)

11 A sequence of patterns is made from circular tiles ● and square tiles □

Here are the first three patterns in the sequence.



pattern number 1 pattern number 2 pattern number 3

(a) How many square tiles are needed to make pattern number 6?

squares 1 2 3 n
1 4 9 n^2

P1 writes a correct sequence as far as pattern 6
or
uses rule n^2
or
draws pattern 6

6^2

A1

36

(2)

(b) How many circular tiles are needed to make pattern number 20?

Circles 1 2 3 n
4 8 12 4n

P1 writes at least 5 terms of the sequence
or
uses rule 4n

4×20

A1

80

(2)

Derek says,

"When the pattern number is odd, an odd number of square tiles is needed to make the pattern."

(c) Is Derek right?
You must give reasons for your answer.

Yes

squares rule n^2
if n odd n^2 also odd
because odd × odd = odd

C2 any valid reason given to support answer yes

(2)

note Word yes must be supported by valid reason
*) cannot score C1

(Total for Question 11 is 6 marks)

12 There are only 7 blue pens, 4 green pens and 6 red pens in a box.

One pen is taken at random from the box.

Write down the probability that this pen is blue.

B B B B B B B G G G G R R R R R R

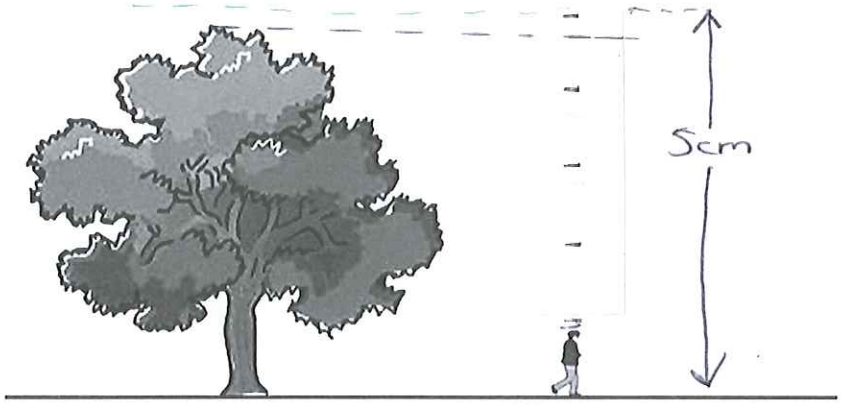
M1 any valid diagram or correct process that aids the working

$P(\text{Blue}) = \frac{7}{17}$ A1

.....

(Total for Question 12 is 2 marks)

13 The diagram shows a tree and a man.



The man is of average height.
The tree and the man are drawn to the same scale.

(a) Write down an estimate for the real height, in metres, of the man.

allow 1.65 → 1.85

B1

1.8 metres

(1)

(b) Find an estimate for the real height, in metres, of the tree.

5 x "1.8m"

M1 use of (4.5 → 5 times their height of man)

7.4 → 9.3

A1

9 metres

(2)

(Total for Question 13 is 3 marks)

14 Year 9 students from Halle School were asked to choose one language to study.

The table shows information about their choices.

Language	Number of students	
French	56	168°
Spanish	40	120°
German	24	72°
	120	

P1 correct process to find size of an angle

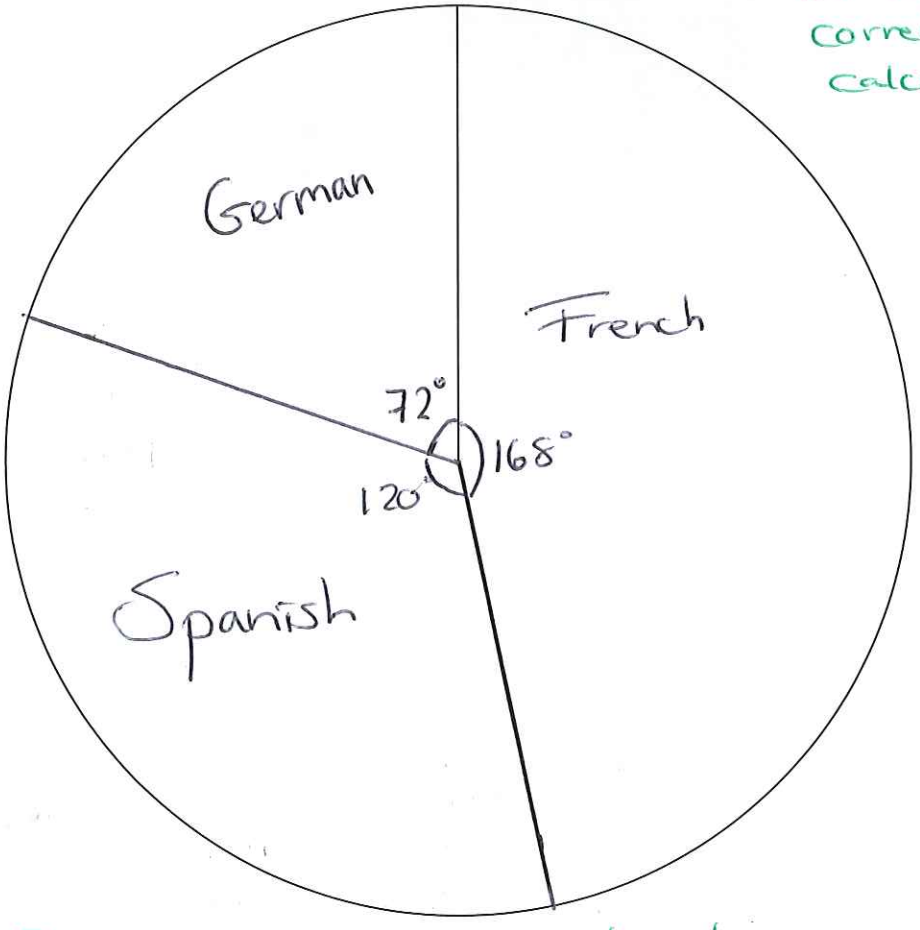
(a) Draw an accurate pie chart to show this information.

$\frac{360^\circ}{120} = 3^\circ$

$\therefore$ each student $= 3^\circ$

$24 \times 3 = 72$ $\quad$ $56 \times 3 = 168$

m1 all angles correctly calculated

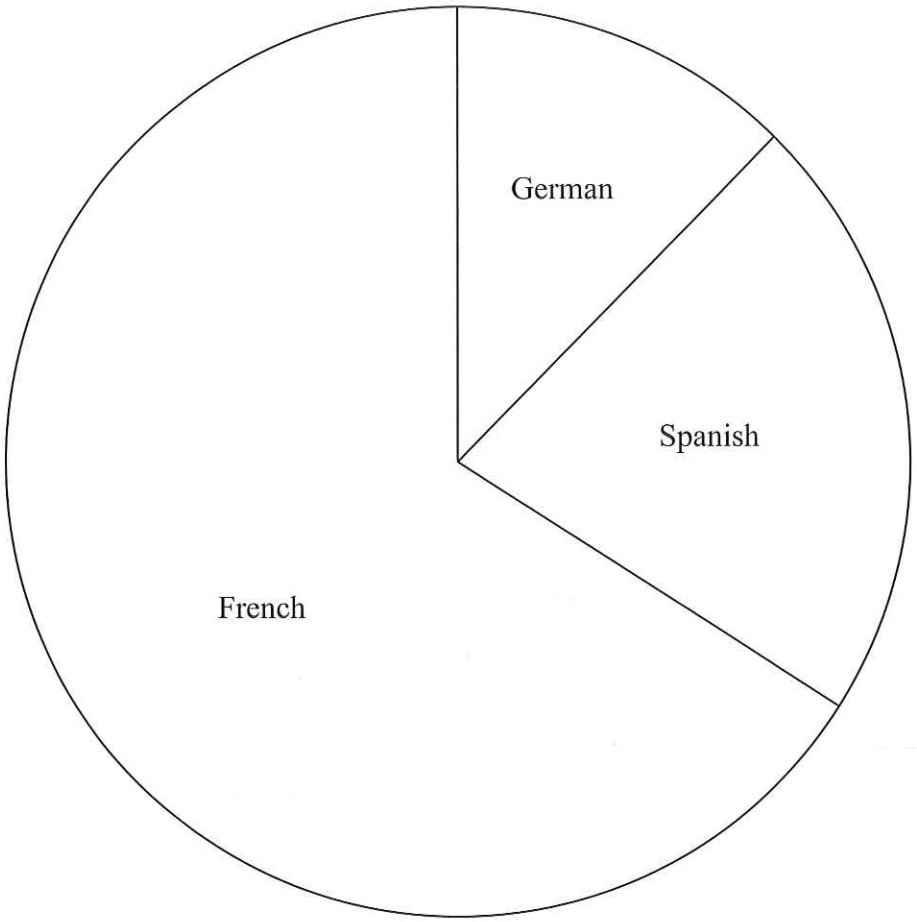


A1 fully correct pie chart all angles ± 2°

(3)

Year 9 students from Lowry School were also asked to choose one language to study.

This accurate pie chart shows information about their choices.



Shameena says,

"The pie chart shows that French was chosen by more Year 9 students at Lowry School than at Halle School."

(b) Is Shameena right?
You must explain your answer.

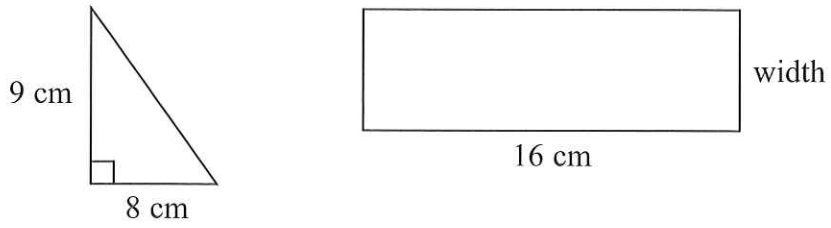
we cannot be certain. A higher proportion of Y9 at Lowry chose French than at Halle school BUT to be certain we need to know the total number of Y9 students at each school.

C1 any sensible answer.

(1)

(Total for Question 14 is 4 marks)

15 Here are a triangle and a rectangle.



The area of the rectangle is 6 times the area of the triangle.

Work out the width of the rectangle.

Area triangle $= \frac{9\text{cm} \times 8\text{cm}}{2}$

$= \frac{72\text{cm}^2}{2}$

$= 36\text{cm}^2$

P1 correct process to find the area of the triangle

Area Rectangle $= 6 \times$ "36cm^2"

$= 216\text{cm}^2$

M1 "their" area $\Delta \times 6$

$36 \times 6 = 216$

$\therefore 16 \times \text{width} =$ "216cm^2"

$\text{width} = 13.5$

M1 $16 \times$ width = "their" area rectangle

$16 \times 10 = 160$

$16 \times 15 = 240$ A1 cao

$16 \overline{)2156.80}$ $= 13.5$

$16 \times 13 = 48 + 160 = 208$

$16 \times 12 = 32 + 160 = 192$

13.5 ..... cm

(Total for Question 15 is 4 marks)

16 $v = u + at$

$u = 1 \quad a = -3 \quad t = \frac{1}{2}$

Work out the value of v.

$V = 1 + (-3)(\frac{1}{2})$ M1 substitutes correctly

$= 1 - \frac{3}{2}$

$= \frac{2}{2} - \frac{3}{2}$

$= -\frac{1}{2}$

A1 cao

$v = -\frac{1}{2}$ .....

(Total for Question 16 is 2 marks)

17 5 tins of soup have a total weight of 1750 grams.
4 tins of soup and 3 packets of soup have a total weight of 1490 grams.

Work out the total weight of 3 tins of soup and 2 packets of soup.

$5t = 1750 \Rightarrow t = 350$ B1

$$5\overline{)1750} = 350$$

$4t + 3p = 1490$

$4 \times 350 + 3p = 1490$

$1400 + 3p = 1490$ [−1400

$3p = 90$ [÷3

$p = 30$

P1 correct process to find the value of one packet

1 tin weighs 350g

1 packet weighs 30g

3 tins + 2 packets

$= 3 \times "350" + 2 \times "30"$ M1 correct use of "their" p and t

$= 1050 + 60$

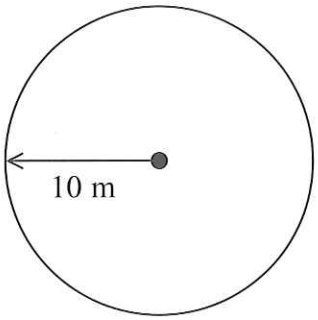
$= 1110$

A1 cao

1110 grams

(Total for Question 17 is 4 marks)

18 Balena has a garden in the shape of a circle of radius 10 m.
He is going to cover the garden with grass seed to make a lawn.



Grass seed is sold in boxes.
Each box of grass seed will cover 46 m^2 of garden.

Balena wants to cover all the garden with grass seed.

(a) Work out an estimate for the number of boxes of grass seed Balena needs.
You must show your working.

P1 use of πr^2 for area of circle

Area garden $= \pi r^2$
$\approx 3 \times 10^2$
$= 300\ m^2$

B1 sight of 3 or 50 for estimates

Each box cover approx $50\ m^2$

Balena needs approx $\frac{"300"}{"50"} = 6$ boxes

M1

A1

6

(4)

(b) Is your estimate for part (a) an underestimate or an overestimate?
Give a reason for your answer.

Underestimate

π rounded DOWN ∴ Area garden smaller than Actual

Box coverage area rounded UP ∴ each box doesn't actually cover as much

C1 any sensible answer

lower Area / upper box = underestimate

(1)

(Total for Question 18 is 5 marks)

19 (a) Solve $4(x - 5) = 18$

$4x - 20 = 18$ [+20

$4x = 38$ [÷ 4

$x = 9.5$

M1 any correct first step

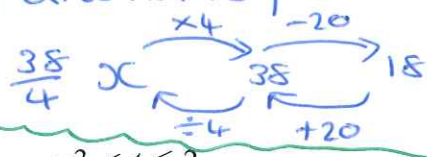
accept $\frac{38}{4}$, $9\frac{2}{4}$, $9\frac{1}{2}$

A1

$x =$ 9.5

(2)

alternative for lower ability



$\frac{38}{4}$ x 38 18

$\frac{38}{4} = 9\frac{2}{4} = 9\frac{1}{2}$

$-3 < t \leqslant 2$

t is an integer.

(b) Write down all the possible values of t.

A1 any three correct

A2 all correct

−2, −1, 0, 1, 2

(2)

(Total for Question 19 is 4 marks)

20 Azmol is paid £1500 per month.
He is going to get a 3% increase in the amount of money he is paid.

Work out how much money Azmol will be paid per month after the increase.

3% of £1500 = £45

P1 any correct process to calculate 3% of £1500

∴ After the increase Azmol will be paid

£1500 + £45 = £1545

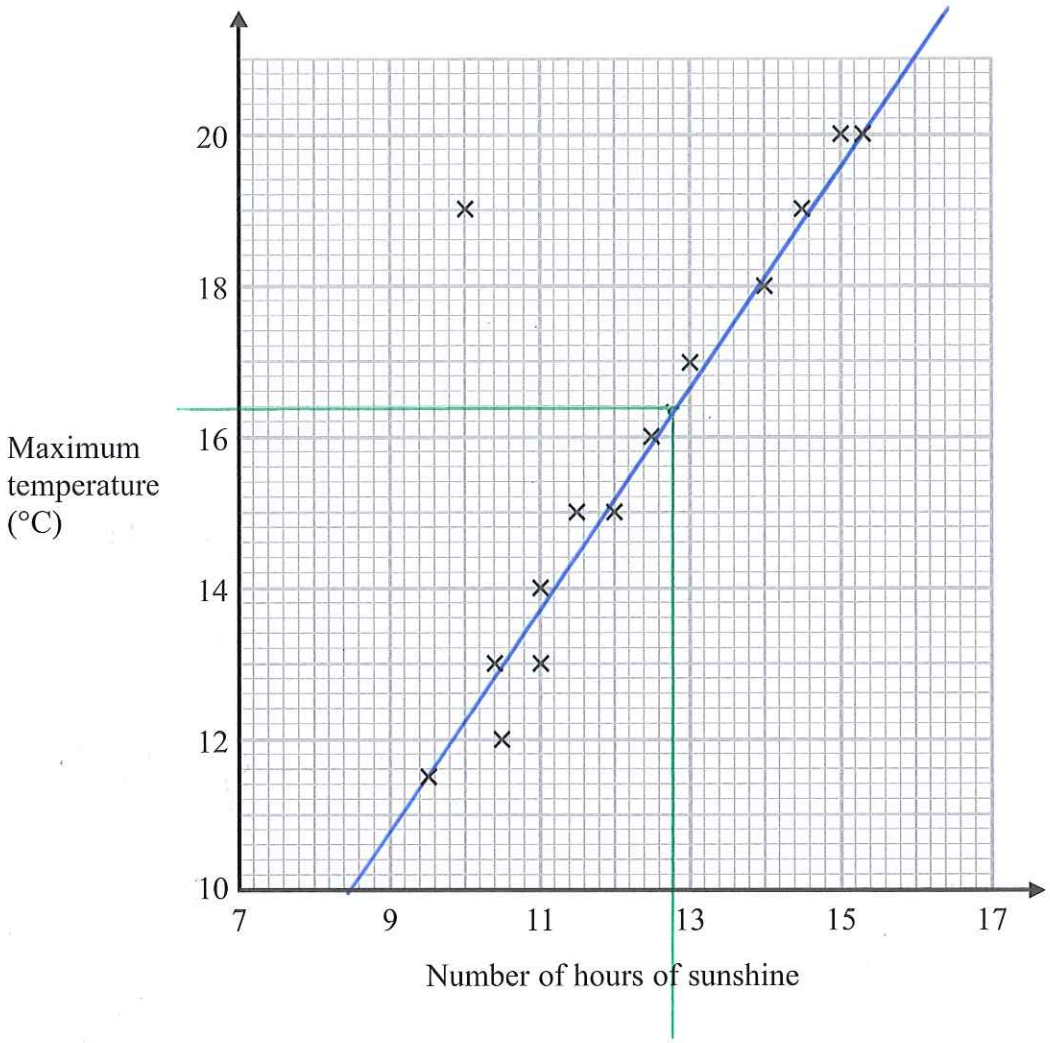
A1 cao

£ 1545

(Total for Question 20 is 2 marks)

Overlap with H begins here

21 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.

B1

(10 , 19)

(1)

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

B1

positive

(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.

B1 line of best fit (must have this) A1

(12.6 – 13) 12.8 hours

(2)

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.

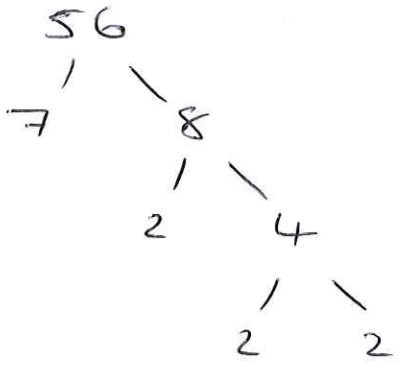
Yes, the relationship is linear and positive, the higher the ~~them~~ maximum temperature the higher the number of hours of sunshine

(1)

C1 any sensible.

(Total for Question 21 is 5 marks)

22 Express 56 as the product of its prime factors.



P1 any correct process to find prime factors of 56

A1

or $7 \times 2 \times 2 \times 2$

7×2^3

(Total for Question 22 is 2 marks)

23 Work out 54.6×4.3

$\approx 50 \times 4 = 200$

546
× 43
1638
21840
23478

P1 any correct first step of process to perform long multiplication

X	500	40	6	
40	20000	1600	240	
3	1500	120	18	
	21500	1720	258	

M1 fully correct calculation OR one error made

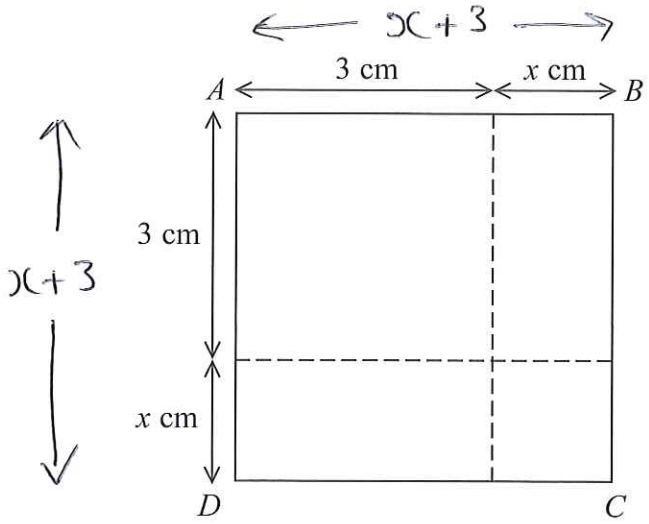
21500
1720
258 +
23478

A1 cao

234.78

(Total for Question 23 is 3 marks)

24



The area of square $ABCD$ is 10 cm^2.

Show that $x^2 + 6x = 1$

$(x + 3)^2 = 10$

$(x + 3)(x + 3) = 10$

$x^2 + 3x + 3x + 9 = 10$

$x^2 + 6x + 9 = 10$

$x^2 + 6x = 1$

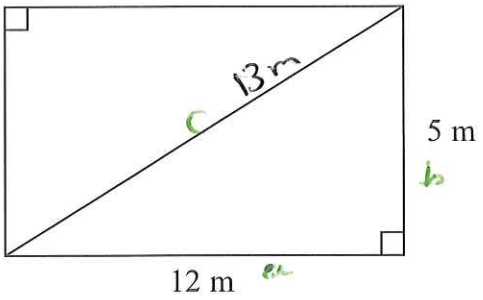
M1 use of $(x+3)$

M1 fully correct expansion

A1 * correct simplification

(Total for Question 24 is 3 marks)

25 This rectangular frame is made from 5 straight pieces of metal.



The weight of the metal is 1.5 kg per metre.

Work out the total weight of the metal in the frame.

Use pythagoras to find length of diagonal

$c^2 = a^2 + b^2$

$= 12^2 + 5^2$

$= 144 + 25$

$= 169$

P1 correct process to find length of diagonal

$c = \sqrt{169}$

$= \underline{13}$ A1

Total metal used = 2x 12m + 2x5m + "13m"

M1 adds all pieces of metal together = 24m + 10m + 13m

= 47m

Total weight = "47" x 1.5 kg M1

= 47 + 23.5

= 70.5 kg

A1 cao

70.5 kg

(Total for Question 25 is 5 marks)

26 The equation of the line L_1 is $y = 3x - 2$
The equation of the line L_2 is $3y - 9x + 5 = 0$

Show that these two lines are parallel.

L_1 $y = 3x - 2$ gradient $= 3$ → B1

L_2 $3y - 9x + 5 = 0$ [+ 9x

$3y + 5 = 9x$ [− 5

$3y = 9x - 5$ [÷ 3 M1

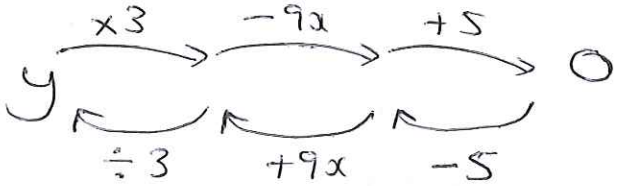
$y = 3x - \frac{5}{3}$ gradient = 3

L_1 and L_2 both have gradient 3 and so are parallel.

(Total for Question 26 is 2 marks)

OR // to make y the subject

L_2

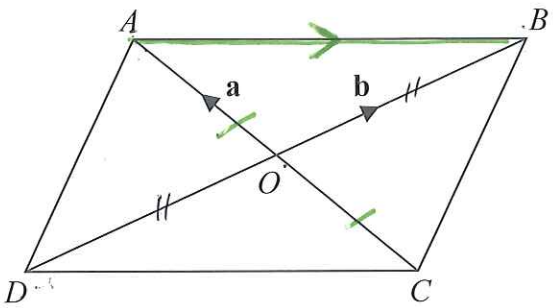


$$\frac{0 - 5 + 9x}{3} = y$$

$$-\frac{5}{3} + 3x = y$$

$$y = 3x - \frac{5}{3}$$

27



ABCD is a parallelogram.
The diagonals of the parallelogram intersect at *O*.

$\overrightarrow{OA} = \mathbf{a}$ and $\overrightarrow{OB} = \mathbf{b}$

(a) Find, in terms of **b**, the vector $\overrightarrow{DB}$.

B1

$2\underset{\sim}{b}$

(1)

(b) Find, in terms of **a** and **b**, the vector $\overrightarrow{AB}$.

B1

$-\underset{\sim}{a} + \underset{\sim}{b}$ or $\underset{\sim}{b} - \underset{\sim}{a}$

(1)

(c) Find, in terms of **a** and **b**, the vector $\overrightarrow{AD}$.

$\overrightarrow{AD} = \overrightarrow{AC} + \overrightarrow{CD}$

$= -2\underset{\sim}{a} - (-\underset{\sim}{a} + \underset{\sim}{b})$

$= -2\underset{\sim}{a} + \underset{\sim}{a} - \underset{\sim}{b}$

$= -\underset{\sim}{a} - \underset{\sim}{b}$

B1

$-\underset{\sim}{a} - \underset{\sim}{b}$

(1)

(Total for Question 27 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS