

Write your name here	
Surname	Other names <b>Mr FREAKES</b>
<b>Pearson Edexcel</b> <b>Level 1/Level 2 GCSE (9 - 1)</b>	Centre Number <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>
Candidate Number <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	
<h2 style="margin: 0;">Mathematics</h2> <h3 style="margin: 0;">Paper 2 (Calculator)</h3>	
<b>Foundation Tier</b>	
Sample Assessment Materials – Issue 2 <b>Time: 1 hour 30 minutes</b>	Paper Reference <b>1MA1/2F</b>
<b>You must have:</b> Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator.	Total Marks <div style="border: 1px solid black; width: 50px; height: 50px; margin: 0 auto;"></div>

### 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.*
- **Calculators may be used.**
- If your calculator does not have a  $\pi$  button, take the value of  $\pi$  to be 3.142 unless the question instructs otherwise.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**



### 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 ►

**S48573A**

©2015 Pearson Education Ltd.

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



PEARSON

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 Write down the value of the 3 in the number 4376

300

(Total for Question 1 is 1 mark)

- 2 (a) Write  $\frac{7}{16}$  as a decimal.

$(7 \div 16)$

0.4375

(Total for Question 2 is 1 mark)

- 3 Here is a list of numbers

4 7 9 25 27 31 64

From the numbers in the list, write down a cube number.

$$27 = 3 \times 3 \times 3 = 3^3$$

$$64 = 4 \times 4 \times 4 = 4^3$$

only one needed  
↓ ↓

27 or 64

(Total for Question 3 is 1 mark)

- 4 Find the value of  $(2.8 - 0.45)^2 + \sqrt[3]{5.832}$

$$= (2.35)^2 + \sqrt[3]{5.832}$$

$$= 5.5225 + 1.8 = 7.3225$$

$$~~= 5.6725~~$$

$$~~= 6.28 \text{ (2DP)}~~$$

(Total for Question 4 is 2 marks)

- 5 There are some boys and girls in a classroom.

The probability of picking at random a boy is  $\frac{1}{3}$

What is the probability of picking a girl?

$$\begin{aligned}
 P(\text{girl}) + P(\text{boy}) &= 1 \\
 \frac{2}{3} + P(\text{girl}) &= 1 \\
 P(\text{girl}) &= 1 - P(\text{boy}) \\
 &= 1 - \frac{1}{3} \\
 &= \frac{3}{3} - \frac{1}{3} \\
 &= \frac{2}{3}
 \end{aligned}$$

(Total for Question 5 is 1 mark)

- 6 Jan writes down

one multiple of 9  
and two different factors of 40

Jan adds together her three numbers.

Her answer is greater than 20 but less than 30

Find three numbers that Jan could have written down.

multiples of 9 : 9, 18, 27, 36, 45, 54 ①

Factors of 40 : 1, 40, 2, 20, 4, 10, 5, 8

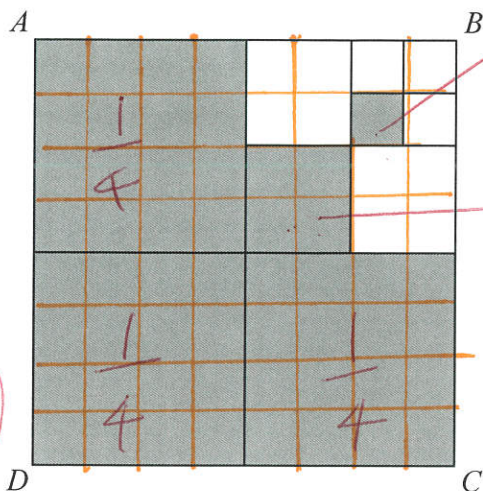
e.g. 1, 2, 18  $(1 + 2 + 18 = 21)$   
which is greater than  
20 but less than 30

(Total for Question 6 is 3 marks)



- 7  $ABCD$  is a square.  
This diagram is drawn accurately.

MW  
25



$\frac{1}{4}$  of a  $\frac{1}{4}$  of a  $\frac{1}{4}$   
 $= \frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}$

$\frac{1}{4}$  of a  $\frac{1}{4}$   
 $(\frac{1}{4} \times \frac{1}{4})$

or  $\frac{1}{4}$   
 adding lines  
 to diagram  
 to show 64ths

What fraction of the square  $ABCD$  is shaded?

$$= \frac{3}{4} + \left( \frac{1}{4} \times \frac{1}{4} \right) + \left( \frac{1}{4} \times \frac{1}{4} \times \frac{1}{4} \right) \quad \text{PI}$$

$$= \frac{3}{4} + \frac{1}{16} + \frac{1}{64}$$

(x16)                      (x4)

$$= \frac{48}{64} + \frac{4}{64} + \frac{1}{64}$$

$$= \frac{53}{64} \quad \text{AI}$$

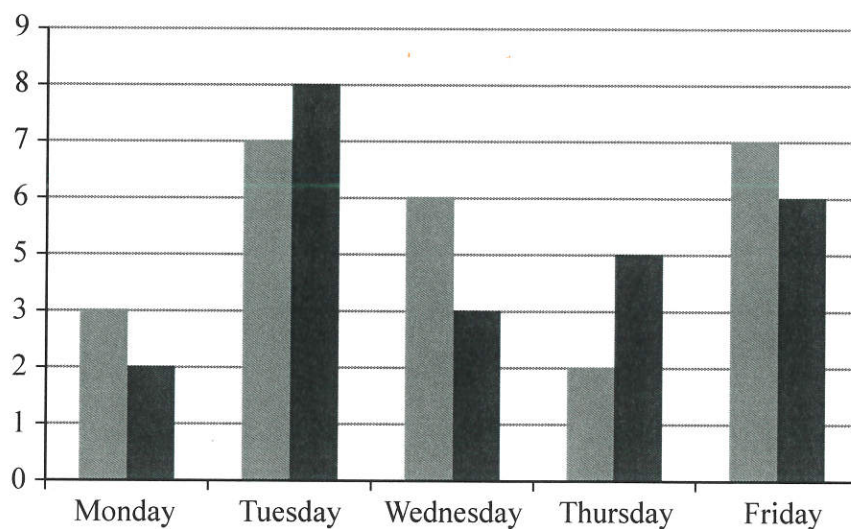
(Total for Question 7 is 2 marks)

\* Can use a calculator  $\Rightarrow$  so

$$\frac{3}{4} + \frac{1}{16} + \frac{1}{64} = \frac{53}{64} \quad \text{AI}$$

- 8 Sam and Max work in a shop from Monday to Friday.

Sam draws a graph to show the number of TVs they each sell.



Write down **three** things that are wrong with this graph.

1 No key

2 y axis label missing

3 4 missing on y axis.

(Total for Question 8 is 3 marks)

- 9 Here is a list of numbers

~~12~~ ~~19~~ ~~12~~ ~~15~~ ~~11~~ ~~15~~ ~~12~~ ~~13~~ ~~17~~

Find the median.

MW 62

11, 12, 12, 12, 13, 15, 15, 17, 19

↑

①

(Total for Question 9 is 2 marks)

- 10 (a) Rob buys  $p$  packets of plain crisps and  $c$  packets of cheese crisps.

Write down an expression for the total number of packets of crisps Rob buys.

$$p + c$$

(1)

- (b) Solve  $3x - 5 = 9$

MW  
135a

$$+5$$

$$+5$$

1 mark.

$$3x = 14$$

$$\div 3$$

$$\div 3$$

$$x = \frac{14}{3}$$

$$x =$$

(2)

(Total for Question 10 is 3 marks)

- 11 Adam says,

“When you multiply an even number by an odd number  
the answer is always an odd number.”

- (a) Write down an example to show Adam is wrong.

$$4 \times 9 = 36$$

(1)

Betty says,

“When you multiply two prime numbers together  
the answer is always an odd number.”

- (b) Betty is wrong.  
Explain why.

$$2 \times 3 = 6$$

2 and 3 are both prime, but 6 is even.

(2)

(Total for Question 11 is 3 marks)



12 You can use the information in the table to convert between kilometres and miles.

miles	0	5	20	40
kilometres	0	8	32	64

$\times 3$   
15 miles  
24 km

(a) Use this information to draw a conversion graph.

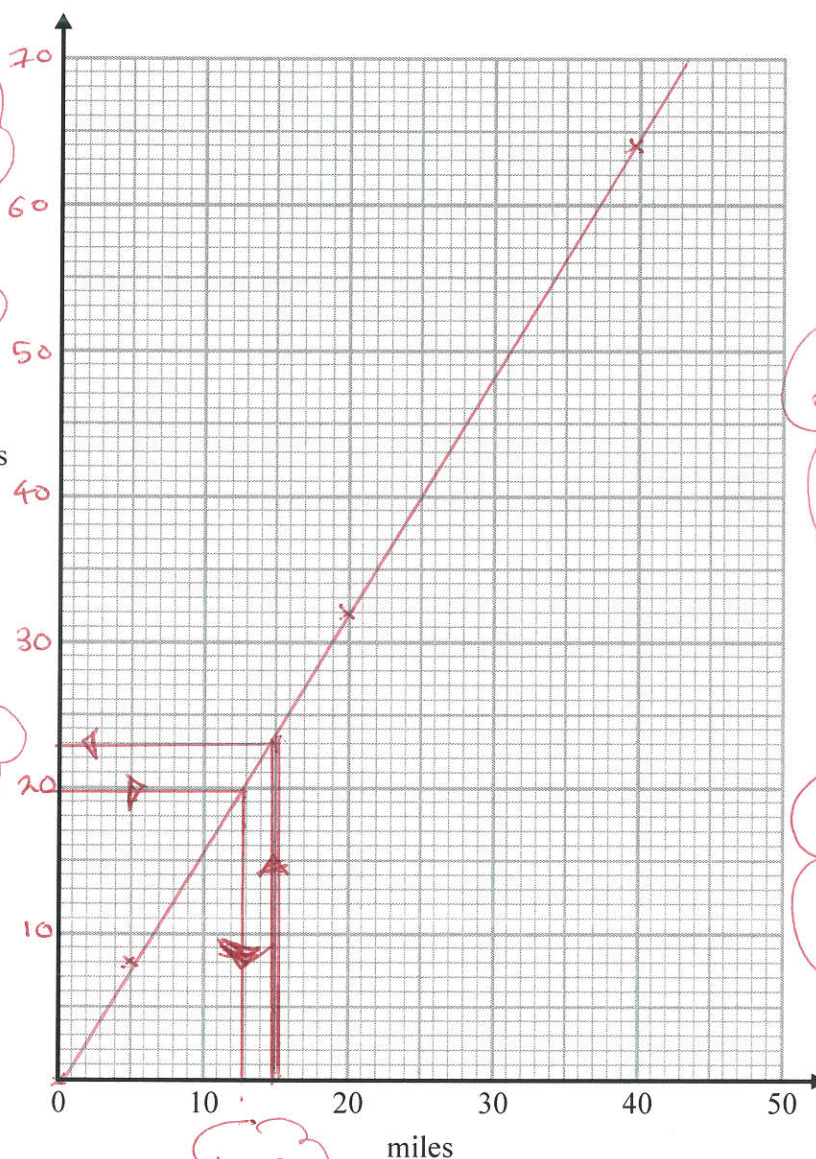
$\times 3$

1 mark for  
scale on  
y axes

kilometres

plot at least  
2 points  
mark

1 mark for  
fully correct  
graph



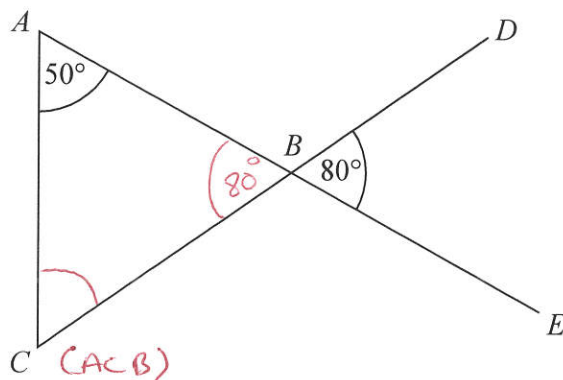
(3)

(b) Which is further, 20 kilometres or 15 miles?  
You must show how you got your answer.

20 km = 12 - 13 mile

or 15 miles = 23 - 24 km

1 15 miles is further (Total for Question 12 is 5 marks)

MW  
12/1

$ABE$  and  $CBD$  are straight lines.

Show that triangle  $ABC$  is an isosceles triangle.  
Give a reason for each stage of your working.

(B1)

$$\underline{\underline{ABC = 80^\circ}} \quad (\text{vertically opposite angles are equal})$$

$$\begin{aligned} \angle ACB &= 180^\circ - (50 + 80) & (\text{angles in a triangle add up to } 180^\circ) \\ &= \underline{\underline{180^\circ - 130^\circ}} & \text{(M1)} \end{aligned}$$

$$\angle ACB = \underline{\underline{50^\circ}} \quad \text{(A1)}$$

$$\angle ACB = \angle CAB = 50^\circ \quad (\text{Base angles of an isosceles triangle are equal})$$

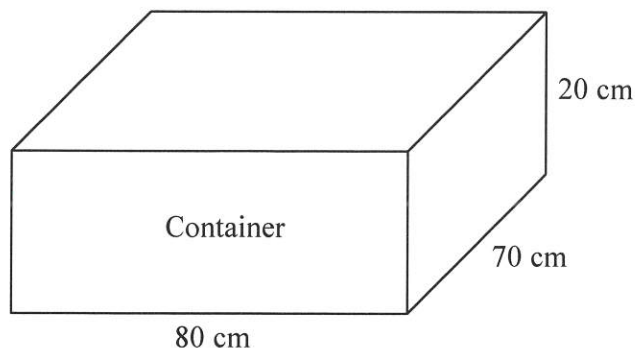
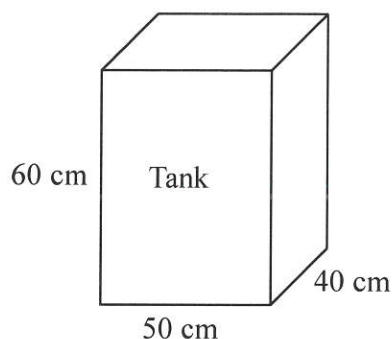
two equal angles,  
so  $ABC$  must be  
isosceles.

(Total for Question 13 is 4 marks)

\* Must give ~~at~~ all 3 reasons with  
the underlined words written to get the  
Communication mark.



- 14 The diagram shows a tank in the shape of a cuboid.  
It also shows a container in the shape of a cuboid.



The tank is full of oil.  
The container is empty.

35% of the oil from the tank is spilled.  
The rest of the oil from the tank is put into the container.

Work out the height of the oil in the container.  
Give your answer to an appropriate degree of accuracy.

$$\text{Tank volume } 50 \times 40 \times 60 = 120000 \quad (1 \text{ mark})$$

$$35\% \text{ of the oil from the cuboid } 120000 \times 0.35 \\ = 42000$$

$$\text{Remove } 35\% \text{ of oil from cuboid } 120000 - 42000 \\ = 78000$$

$$\text{missing length } 78000 \div (80 \times 70) = 13.928 \text{ cm} \\ = 13.9 \text{ (1 DP)}$$

(Total for Question 14 is 5 marks)

15 The diagram below represents two towns on a map.

Diagram  
accurately drawn

MW  
28

×  
Towey

×  
Worsley

Scale: 1 cm represents 3 kilometres.

Work out the distance, in kilometres, between Towey and Worsley.

(scaled down!)

$$5 \text{ cm} \times 3$$

their length  $\times 3$  (M1)

$$5 \times 3$$

(A1)

$5 \text{ cm} \pm 0.1 \text{ cm}$   
so allow  $14.7 \rightarrow 15.3$   
inclusive.

15 km

(Total for Question 15 is 2 marks)

16 Find the Highest Common Factor (HCF) of 24 and 60

MW  
29

24 : 1, 2, 3, 4, 6, 8, 12, 24

60 : 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60

(M1)  $\Rightarrow$  starts to list factors

OR writes

$$\text{either } 24 = 2^3 \times 3$$

12 (cao.)

(Total for Question 16 is 2 marks)

$$\text{OR } 60 = 2^2 \times 3 \times 5$$

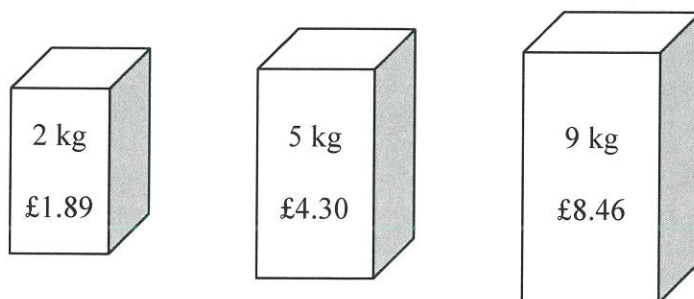
OR gives 2, 3, 4, 6 as their answer.

ie 2, 3, 4 or 6 gives (M1)



17 Soap powder is sold in three sizes of box.

MW  
5/1



A 2 kg box of soap powder costs £1.89

A 5 kg box of soap powder costs £4.30

A 9 kg box of soap powder costs £8.46

Which size of box of soap powder is the best value for money?

You must show how you get your answer.

$$1.89 \div 2 = 0.945 \quad P_1$$

$$4.30 \div 5 = 0.86$$

$$8.46 \div 9 = 0.94 \quad P_1$$

£0.86 is the cheapest  
per kg.

5kg is the best value  
for money. CI

(Total for Question 17 is 3 marks)

18  $f = 5x + 2y$   
 $x = 3$  and  $y = -2$

Find the value of  $f$ .

MW 95

$$\begin{aligned} f &= 5 \times 3 + 2 \times (-2) \\ &= 15 + (-4) \\ &= 15 - 4 \\ &= 11 \end{aligned}$$

M1

(Total for Question 18 is 2 marks)

19 Jane made some almond biscuits which she sold at a fete.

MW 39

She had:

5 kg of flour

3 kg of butter

2.5 kg of icing sugar

320 g of almonds

Here is the list of ingredients for making 24 almond biscuits.

Ingredients for 24 almond biscuits

150 g flour

100 g butter

75 g icing sugar

10 g almonds

Jane made as many almond biscuits as she could, using the ingredients she had.

Work out how many almond biscuits she made.

flour 5 kg = 5000 g

$$5000 \div 150 = 33\frac{1}{3}$$

P1

Butter 3 kg = 3000 g

$$3000 \div 100 = 30$$

icing 2.5 kg = 2500 g

$$2500 \div 75 = 33\frac{1}{3}$$

Almond 320 g

$$320 \div 10 = 32$$

Because the amount of butter there is can only make 30 lots of 24 biscuits.

$$30 \times 24 = 720$$

(Total for Question 19 is 3 marks)



20 (a) Factorise  $3f + 9$

MW 94

$$3f + 9 = 3(f + 3) \quad \text{BI}$$

(1)

(b) Factorise  $x^2 - 2x - 15$

MW 157

$$\begin{aligned} x^2 - 2x - 15 &= x^2 - 5x + 3x - 15 \\ &= x(x - 5) + 3(x - 5) \\ &= (x - 5)(x + 3) \quad \text{AI} \end{aligned}$$

M1

(2)

(Total for Question 20 is 3 marks)

21  $q = \frac{p}{r} + s$

MW 136  
(or 101)

Make  $p$  the subject of this formula.

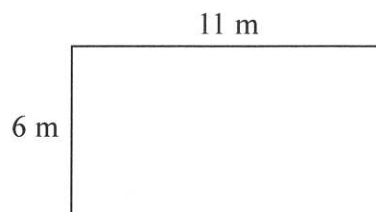
$$\begin{aligned} q &= \frac{p}{r} + s \\ q - s &= p/r \quad \text{M1} \\ r(q - s) &= p \\ p &= r(q - s) \end{aligned}$$

$$\begin{aligned} p &= rq - rs \\ p &= qr - sr \quad \text{AI} \end{aligned}$$

(Total for Question 21 is 2 marks)

22 A tin of varnish costs £15

A rectangular floor has dimensions 6 m by 11 m.  
The floor is going to be covered in varnish.



Helen assumes that each tin of this varnish covers an area of  $12 \text{ m}^2$ .

(a) Using Helen's assumption, work out the cost of buying the varnish for this floor.

Area of floor =  $11 \times 6$  P1  
 $= 66 \text{ m}^2$

$66 \text{ m}^2 \div 12 \text{ m}^2 = 5.5$  tins P1  
round up to the nearest  
whole tin = 6 tins £ A1 (4)

Helen finds that each tin of varnish covers less than  $12 \text{ m}^2$ .

(b) Explain how this might affect the number of tins she needs to buy.

She will need to buy more  
tins as each tin doesn't  
cover  $12 \text{ m}^2$  C1 (1)

(Total for Question 22 is 5 marks)



- 23 Frank, Mary and Seth shared some sweets in the ratio 4 : 5 : 7  
Seth got 18 more sweets than Frank.

MW  
106 & 107

Work out the total number of sweets they shared.

Seth : Frank

$$7 - 4 = 3$$

$$7 : 4$$

$$18 \div 3 = 6 \text{ per part } P_1$$

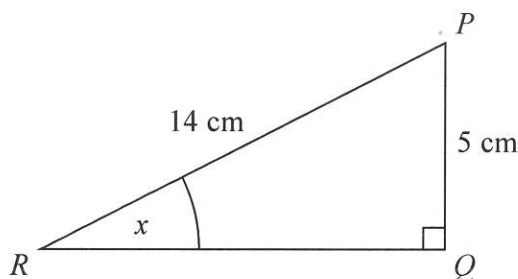
$$4 + 5 + 7 = 16 \text{ parts altogether}$$

$$6 \times 16 = 96 \quad P_1$$

(Total for Question 23 is 3 marks)

- 24  $PQR$  is a right-angled triangle.

MW 168



Work out the size of the angle marked  $x$ .  
Give your answer correct to 1 decimal place.

$$\sin x = \frac{5}{14}$$

M1

$$x = 20.9248$$

$$\approx 20.9$$

(Total for Question 24 is 2 marks)

25 Here are the first four terms of an arithmetic sequence.

4 8 12 16  
6 10 14 18

(a) Write an expression, in terms of  $n$ , for the  $n$ th term of this sequence.

adding 4 each time  $\Rightarrow 4n$

2 bigger than the multiples of 4

(M1) (A1) cao

$$4n + 2$$

(2)

The  $n$ th term of a different arithmetic sequence is  $3n + 5$

(b) Is 108 a term of this sequence?  
Show how you get your answer.

$$3n + 5 = 108$$

$$3n = 103$$

$$n = 34.3$$

(-5)

(÷3)

$n$  is NOT a whole number

so 108 is NOT in the sequence.

(C1)

(2)

(Total for Question 25 is 4 marks)

OR  $34^{\text{th}} \text{ term} = 3 \times 34 + 5 = \underline{107}$

$$35^{\text{th}} \text{ term} = 3 \times 35 + 5 = \underline{110}$$

it misses out 108.



26 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.

MW/42

Method 1.

26 mins  $\Rightarrow$  30 miles

(p1) 1 min  $\Rightarrow \frac{30}{26} = 1.1538..$  miles

(p1) 60 min  $\Rightarrow \frac{30}{26} \times 60 = \underline{69.23 \text{ miles}}$

You need to travel at 69.23 mph so no

(c1) Lethna is wrong; you don't have to drive faster than the speed limit.

Method 2.

(Total for Question 26 is 3 marks)

70 mph

60 mins  $\Rightarrow$  70 miles

(p1) 1 min  $\Rightarrow \frac{70}{60} = 1.16666$  miles

(p1) 26 min  $\Rightarrow \frac{70}{60} \times 26 = \underline{30.33 \text{ miles}}$

so no, you can cover 30.33 miles if travelling at 70 mph. (c1)

27 The table shows some information about the foot lengths of 40 adults.

Foot length ( $f$ cm)	Number of adults	$m$	$m \times n$
$16 \leq f < 18$	3	17	51
$18 \leq f < 20$	6	19	114
$20 \leq f < 22$	10	21	210
$22 \leq f < 24$	12	23	276
$24 \leq f < 26$	9	25	225
			876

(a) Write down the modal class interval.

(B1)  $22 \leq f < 24$   
(1)

(b) Calculate an estimate for the mean foot length.

$$876 \div 40$$

(M1) Using midpoints & multiplying by No. of adults  
(A1)  $21.9$  cm  
(3)

(Total for Question 27 is 4 marks)

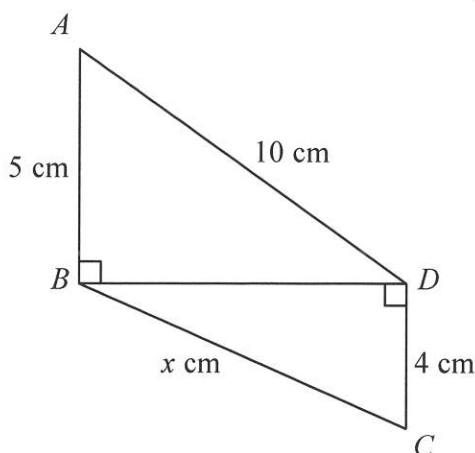
(M1) dep m ft. " $876$ "  $\div 40$   
their total

Accept 22 ONLY if  
workings out is seen.

ie 22 with no workings scores No marks.  
[21.9 attracts all 3 marks.]



28 Triangles  $ABD$  and  $BCD$  are right-angled triangles.



MW  
150a  
or 150b

Work out the value of  $x$ .

Give your answer correct to 2 decimal places.

$$\begin{array}{r} 10^2 = 100 \\ 5^2 = 25 \\ \hline 75 \end{array} \quad \left. \vphantom{\begin{array}{r} 10^2 = 100 \\ 5^2 = 25 \\ \hline 75 \end{array}} \right\} \textcircled{\text{PI}}$$

$$\sqrt{75} = 8.66$$

$$75 + 4^2 = 75 + 16 \quad \textcircled{\text{PI}} \text{ f.t.} \\ = 91$$

$\textcircled{\text{PI}}$   
f.t.

$$\sqrt{91} = 9.539\ldots$$

$\textcircled{\text{AI}}$

9.54

(Total for Question 28 is 4 marks)

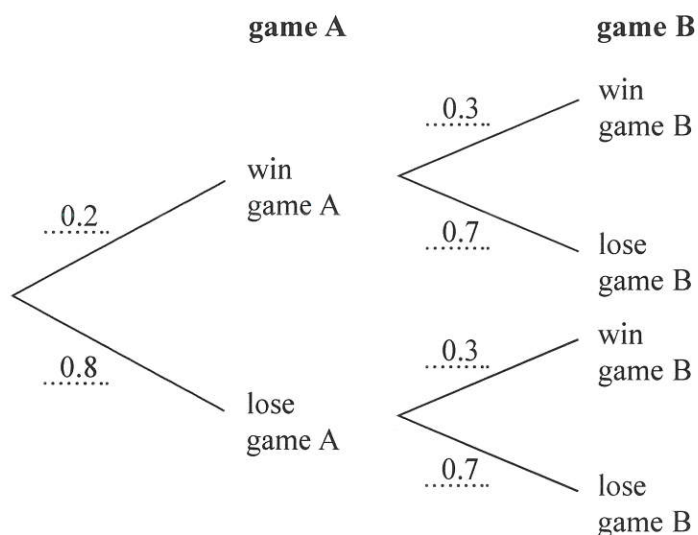
allow  $9.53 \rightarrow 9.54$  inclusive

[Note. It says  $x$  cm so  $x$  is a number,  
so no units required, but do not drop a  
mark for 9.54 cm.]



29 Here is a probability tree diagram.

MW  
151



Work out the probability of winning both games.

$$0.2 \times 0.3$$

(m) for writing 0.2 and 0.3

(A1)

$$0.06$$

(Total for Question 29 is 2 marks)

TOTAL FOR PAPER IS 80 MARKS