Pearson Edexcel

iLowerSecondary

MATHEMATICS

SAMPLE ASSESSMENT MATERIALS

Pearson Edexcel International Award in Lower Secondary Mathematics (LMA11)

For first teaching September 2018

First examination June 2019

Issue 1

Edexcel, BTEC and LCCI qualifications

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ISBN 978 1 4469 5665 6

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Introduction

The Pearson Edexcel International Award in Lower Secondary Mathematics is designed for use in international schools. It is part of a suite of *iLowerSecondary* qualifications offered by Pearson.

These sample assessment materials have been developed to support this qualification and will be used as the benchmark to develop the assessment students will take.

General marking guidance

- All candidates must receive the same treatment. Examiners must mark the last candidate in exactly the same way as they mark the first.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than be penalised for omissions.
- Examiners should mark according to the mark scheme – not according to their perception of where the grade boundaries may lie.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification/indicative content will not be exhaustive. However different examples of responses will be provided at standardisation.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, a senior examiner must be consulted before a mark is given.
- Crossed-out work should be marked **unless** the candidate has replaced it with an alternative response.

Specific guidance for mathematics

1. These mark schemes use the following types of marks:
   - **M** marks: Method marks are awarded for 'knowing a method and attempting to apply it', unless otherwise indicated.
   - **A** marks: Accuracy marks can only be awarded if the relevant method (M) marks have been earned.
   - **B** marks are unconditional accuracy marks (independent of M marks)

2. Abbreviations

   These are some of the traditional marking abbreviations that may appear in the mark schemes.

   - **ft** follow through
   - $\sqrt{\ }$ this symbol is used for correct ft
   - **cao** correct answer only
   - **cso** correct solution only. There must be no errors in this part of the question to obtain this mark
   - **isw** ignore subsequent working
   - **o.e.** or equivalent (and appropriate)
   - **d…** dependent or **dep**
   - **dp** decimal places
   - **sf** significant figures
   - **awrt** answers which round to

3. If a candidate makes more than one attempt at any question:
   - If all but one attempt is crossed out, mark the attempt which is NOT crossed out.
   - If either all attempts are crossed out or none are crossed out, mark all the attempts and score the highest single attempt.

Please check the examination details below before entering your candidate information

Candidate surname	Other names

Pearson Edexcel International Award in Lower Secondary

Centre Number | Candidate Number

Sample Assessment Material for first teaching September 2018

Time: 1 hour 20 minutes | **Paper Reference** LMA11/01

Mathematics

Achievement test

You must have:
Calculator, ruler, pair of compasses

Total Marks

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
- You must **show all your working out** with **your answer clearly identified** at the **end of your solution**.

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.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over

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S 6 0 6 7 0 A 0 1 2 8

Pearson

SECTION A

Answer ALL questions.

In Section A put a cross in one box ☒ to indicate your answer. If you change your mind, put a line through the box ☒ and then put a cross in another box ☒.
Each question in Section A is worth one mark.

1 What is 9.3764 rounded to 2 decimal places?

9.3	9.37	9.38	9.4
☐	☐	☐	☐
A	**B**	**C**	**D**

(Total for Question 1 is 1 mark)

2 What is the solution of the equation $8x - 24 = 64$?

$x = 5$	$x = 8$	$x = 11$	$x = 32$
☐	☐	☐	☐
A	**B**	**C**	**D**

(Total for Question 2 is 1 mark)

3 What is the size of angle x in this triangle?

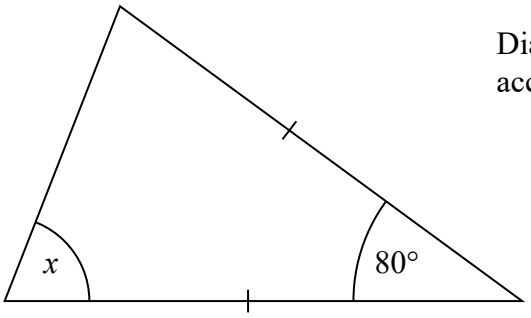

Diagram **NOT** accurately drawn

20°	50°	100°	200°
☐	☐	☐	☐
A	**B**	**C**	**D**

(Total for Question 3 is 1 mark)

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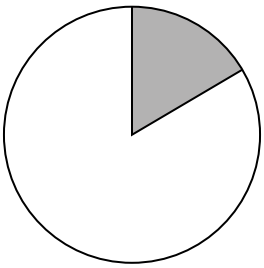
4 What is the mean of these numbers?

50.3 30.1 43.5 41.5 74.5 51.1 41.5

41.5	43.5	44.4	47.5
☐	☐	☐	☐
A	**B**	**C**	**D**

(Total for Question 4 is 1 mark)

5 What word describes the shaded part of this circle?



Circumference	Radius	Sector	Segment
☐	☐	☐	☐
A	**B**	**C**	**D**

(Total for Question 5 is 1 mark)

6 What word describes an angle of 240°?

Acute	Obtuse	Reflex	Right
☐	☐	☐	☐
A	**B**	**C**	**D**

(Total for Question 6 is 1 mark)

7 Work out $7 + 14 \div (14 - 7)$

−5.5	1.5	3	9
☐	☐	☐	☐
A	**B**	**C**	**D**

(Total for Question 7 is 1 mark)

8 The table below shows information about students in a Year 9 class.

Year 9	13 years old	14 years old	Total
Boys	6	9	15
Girls	7	10	17
Total	13	19	32

One student is chosen from the class at random.

What is the probability that the student chosen is a 13 year-old girl?

$\frac{7}{13}$	$\frac{7}{17}$	$\frac{7}{32}$	$\frac{30}{32}$
☐	☐	☐	☐
A	**B**	**C**	**D**

(Total for Question 8 is 1 mark)

9 The number of supporters at a football match was 40 000 when rounded to 2 significant figures.

What was the lowest possible number of supporters at the football match?

35 000	39 500	39 950	39 995
☐	☐	☐	☐
A	**B**	**C**	**D**

(Total for Question 9 is 1 mark)

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10 What is the nth term of this sequence?

17, 24, 31, 38, 45, …

$n + 7$	$7n + 10$	$10n + 7$	$17n + 7$
☐	☐	☐	☐
A	**B**	**C**	**D**

(Total for Question 10 is 1 mark)

11 Which of these values is the smallest?

65%	$\frac{5}{8}$	0.7	$\frac{13}{16}$
☐	☐	☐	☐
A	**B**	**C**	**D**

(Total for Question 11 is 1 mark)

12 A man buys a new car for \$28 500
He then sells the car for \$22 800

What is the percentage loss in the price of the car?

20%	25%	75%	80%
☐	☐	☐	☐
A	**B**	**C**	**D**

(Total for Question 12 is 1 mark)

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13 A box contains counters that are either red, blue or green.

The probability of taking a red counter is shown in the table below.

Colour	Red	Blue	Green
Probability	0.22		

There are twice as many green counters as blue counters in the box.

One counter is taken out of the box at random.

What is the probability that it is green?

0.26	0.39	0.52	0.78
☐	☐	☐	☐
A	**B**	**C**	**D**

(Total for Question 13 is 1 mark)

14 Expand and simplify $(x + 6)(x - 2)$

$x^2 + 4x - 12$	$x^2 - 12$	$x^2 - 8x - 12$	$x^2 + 8x + 12$
☐	☐	☐	☐
A	**B**	**C**	**D**

(Total for Question 14 is 1 mark)

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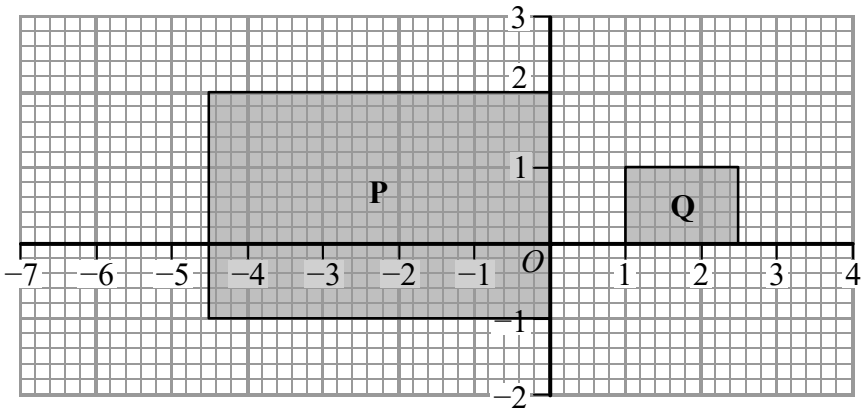
15 What Scale Factor has Shape P been enlarged by to give Shape Q?



-3	$-\frac{1}{3}$	$\frac{1}{3}$	3
☐	☐	☐	☐
A	**B**	**C**	**D**

(Total for Question 15 is 1 mark)

TOTAL FOR SECTION A IS 15 MARKS

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SECTION B

Answer ALL questions.

16 A has coordinates $(-3, -4)$

B has coordinates $(7, 12)$

Work out the coordinates of the midpoint AB.

.....

(Total for Question 16 is 2 marks)

17 (a) Write 84 as a product of its prime factors.

.....

(1)

(b) Find the highest common factor of 84 and 140

.....

(2)

(Total for Question 17 is 3 marks)

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18 Simplify fully the following expression

$$\frac{2m^8}{(2m^3)^2}$$

.....

(Total for Question 18 is 2 marks)

19 A drink is made from fruit juice and soda in the ratio 1 : 4

A jug contains 1750 ml of the drink.

How much soda was used to make the drink in the jug?

..... ml

(Total for Question 19 is 2 marks)

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20 The monthly cost, C, of using a gym is calculated using the formula:

$$C = 12V + 15P$$

where V is the number of visits

and P is the number of personal training sessions.

Last month, a woman visited the gym 8 times.

Her monthly cost was \$171

How many personal training sessions did she have?

.....

(Total for Question 20 is 2 marks)

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21 A semi-circle has a diameter of 5 cm.

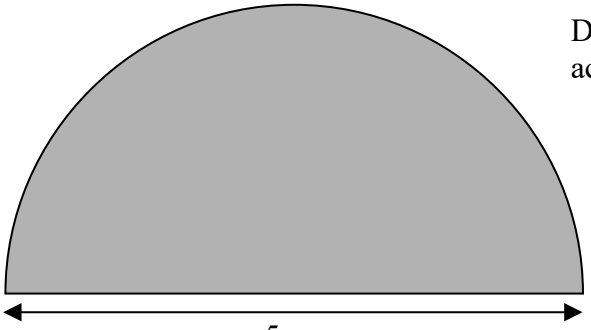

Diagram **NOT** accurately drawn

(a) Calculate the area of the semi-circle.

Give your answer to 3 significant figures.

..... cm^2

(2)

(b) Calculate the perimeter of the semi-circle.

Give your answer to 3 significant figures.

..... cm

(2)

(Total for Question 21 is 4 marks)

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22 The frequency table shows the height, h, of people in a sports club.

Height (h) in cm	Frequency
$150 \leqslant h < 160$	11
$160 \leqslant h < 170$	12
$170 \leqslant h < 180$	14
$180 \leqslant h < 190$	13
	50

Calculate an estimate of the mean height of the people in the sports club.

.....

(Total for Question 22 is 3 marks)

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23 (a) In a sale, the cost of a book is reduced by 20%

The book now costs $21

How much did the book cost before the sale?

$ .....

(2)

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(b) A game is on sale in Shop A and Shop B.

Shop A	**Shop B**
Game costs \$50	Game costs \$60
All prices reduced by 15%	All prices reduced by 20%
	Then a further 10% off for members only

A student is a member at Shop B.

At which shop would the game be the cheapest for the student?

You must show your working.

.....

(3)

(Total for Question 23 is 5 marks)

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24 (a) Expand and simplify $8b + 12 - 5(b - 7)$

.....

(2)

(b) Make x the subject of the formula $y = 4x^2$

.....

(2)

(Total for Question 24 is 4 marks)

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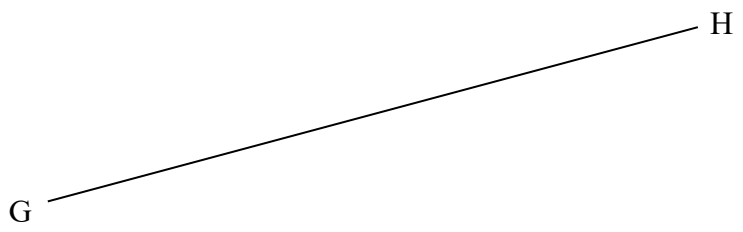
25 Use ruler and compasses to construct the perpendicular bisector of GH.

You must show all your construction lines.



(Total for Question 25 is 2 marks)

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26 (a) A student takes a bus and then a train to get to school.

The probability that the bus arrives late is 0.25

The probability that the train arrives late is 0.2

What is the probability that both the bus and the train are **not** late?

.....

(2)

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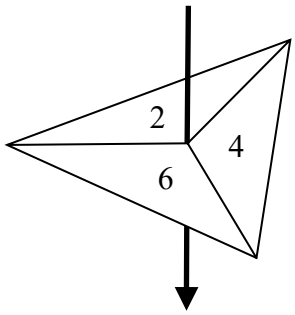
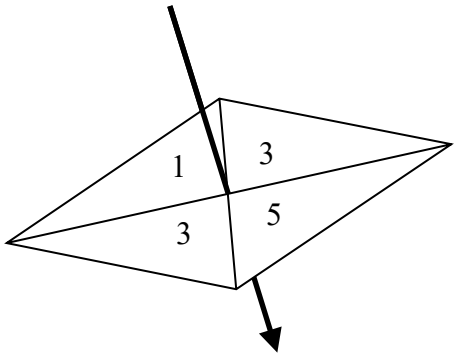
(b) A student has two spinners.

The first spinner has 3 sections, labelled 2, 4, 6



The second spinner has 4 sections, labelled 1, 3, 3, 5



The student spins both spinners and adds the scores together to find a total.

What total score is the student most likely to get?

You must show your working.

.....

(3)

(Total for Question 26 is 5 marks)

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27 (a) Solve $$\frac{5x - 8}{7} = \frac{3x + 2}{3}$$

$x =$ .....

(3)

(b) Solve $$46 \leqslant 35 - 5x$$

.....

(2)

(c) Factorise $$x^2 - 64$$

.....

(1)

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(d) Solve $x^2 - 4x + 3 = 0$

$x =$ .....

$x =$ .....

(3)

(Total for Question 27 is 9 marks)

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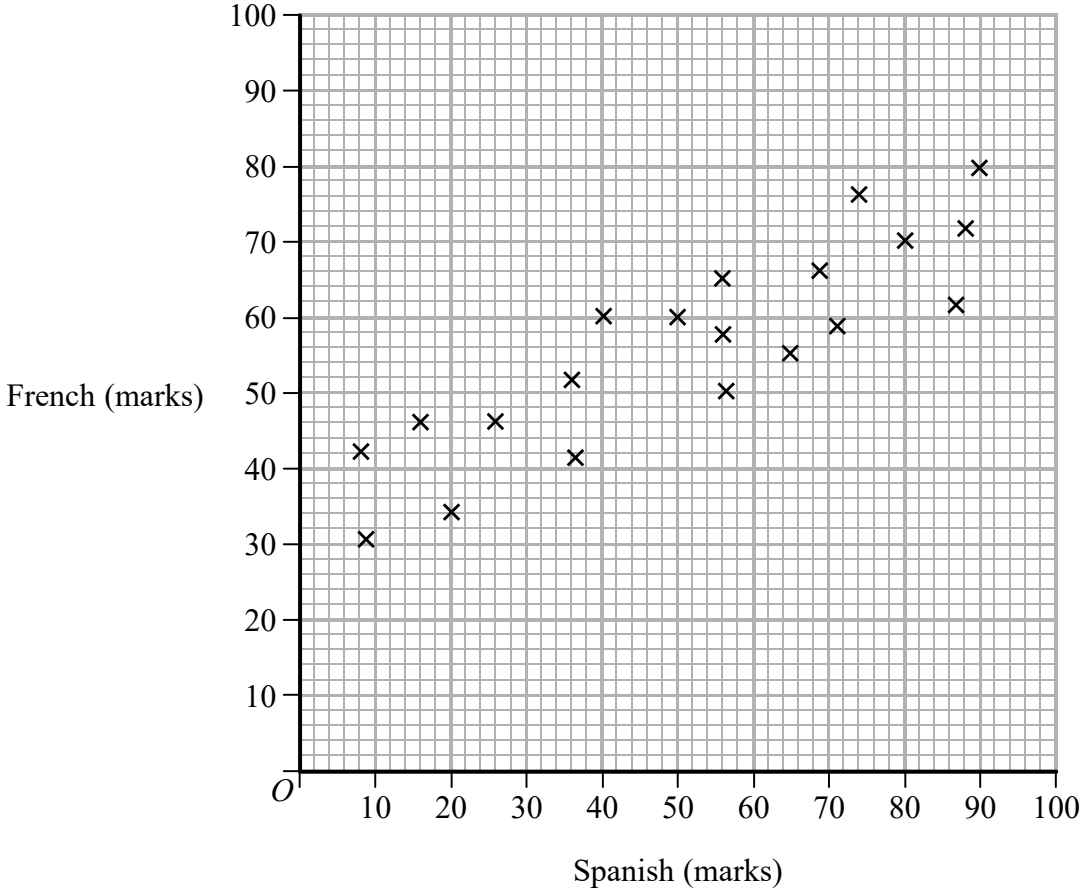
28 The scatter graph shows marks gained by students on a Spanish test and a French test.



(a) Name the type of correlation between the marks in Spanish and the marks in French.

.....

(1)

(b) A student was absent for the French test.

They scored 45 marks on the Spanish test.

Estimate the score they would have got on the French test.

.....

(2)

(Total for Question 28 is 3 marks)

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29 Convert the decimal $0.4\dot{2}$ to a fraction.

You must show your working.

.....

(Total for Question 29 is 2 marks)

30 A vehicle travels 17 km in 20 minutes.

Calculate the average speed, in km/h, of the vehicle.

..... km/h

(Total for Question 30 is 2 marks)

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31 (a) Work out $(9.75 \times 10^7) + (4.6 \times 10^6)$

Give your answer in standard form.

.....

(2)

(b) A crate contains 1.4×10^6 drawing pins.

2.76×10^5 of the drawing pins are removed from the crate.

The rest of the drawing pins are then put into smaller boxes.

Each box contains 100 drawing pins.

How many boxes are filled?

.....

(3)

(Total for Question 31 is 5 marks)

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32 (a) A 14 m rope is fastened to the top of a vertical 11 m flagpole.

The other end of the rope is fastened to the horizontal ground.

How far away from the bottom of the flagpole is the rope fastened to the horizontal ground?

Give your answer correct to 3 significant figures.

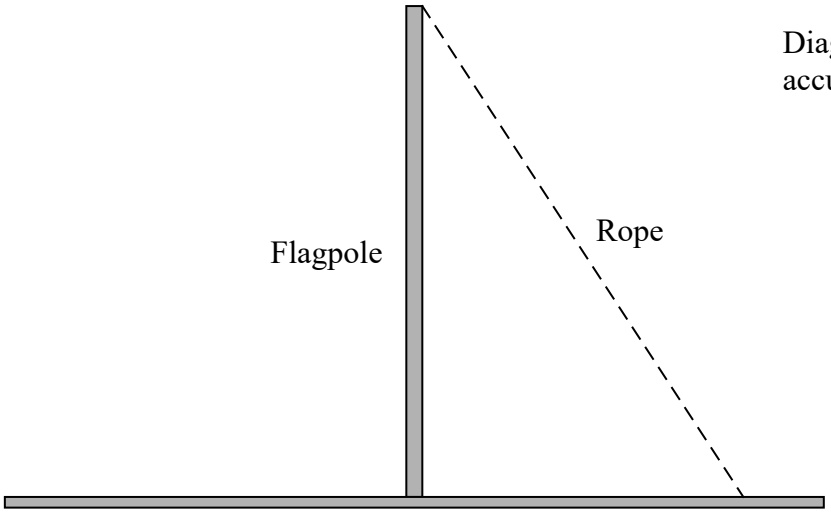

Diagram **NOT** accurately drawn

..... m

(3)

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(b) A ribbon is fastened to the top of another vertical 11 m flagpole.

The ribbon makes an angle of 30° with the flagpole.

How far away from the bottom of the flagpole is the ribbon fastened to the horizontal ground?

Give your answer correct to 3 significant figures.

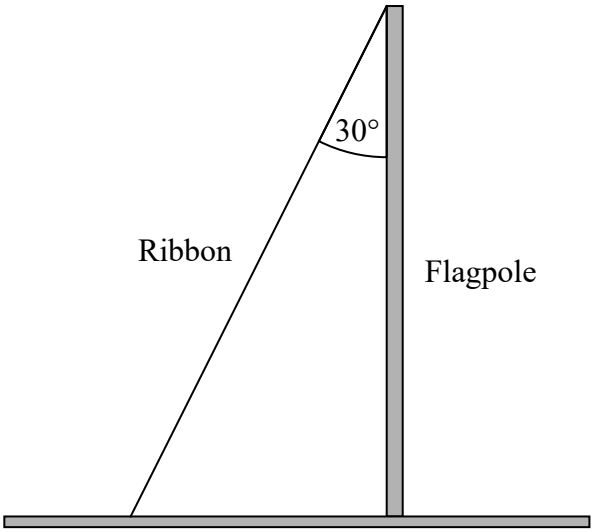

Diagram **NOT** accurately drawn

..... m

(3)

(Total for Question 32 is 6 marks)

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33 A solid, wooden cube has volume 2197 cm^3

A student wants to cover all the faces of the cube with paint.

One tin contains enough paint to cover 1000 cm^2

Does the tin have enough paint to cover all the faces of the cube?

You must show your working.

.....

.....

.....

(Total for Question 33 is 4 marks)

TOTAL FOR SECTION B IS 65 MARKS
TOTAL FOR PAPER IS 80 MARKS

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Mark scheme

Section A

Question number	Answer	Marks
1	C 9.38	**(1)**

Question number	Answer	Marks
2	C $x = 11$	**(1)**

Question number	Answer	Marks
3	B 50°	**(1)**

Question number	Answer	Marks
4	D 47.5	**(1)**

Question number	Answer	Marks
5	C Sector	**(1)**

Question number	Answer	Marks
6	C Reflex	**(1)**

Question number	Answer	Marks
7	D 9	**(1)**

Question number	Answer	Marks
8	C $\frac{7}{32}$	**(1)**

Question number	Answer	Marks
9	B 39 500	**(1)**

Question number	Answer	Marks
10	B $7n + 10$	**(1)**

Question number	Answer	Marks
11	B $\frac{5}{8}$	**(1)**

Question number	Answer	Marks
12	A 20 %	**(1)**

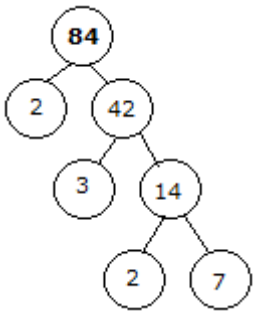
Question number	Answer	Marks
13	C 0.52	**(1)**

Question number	Answer	Marks
14	A $x^2 + 4x - 12$	**(1)**

Question number	Answer	Marks
15	C $\frac{1}{3}$	**(1)**

Section B

Question number	Working	Answer	Notes	Marks
16	$\left(\frac{-3+7}{2}, \frac{-4+12}{2}\right)$ $\left(\frac{4}{2}, \frac{8}{2}\right)$	(2, 4)	M1 for correct method to find *x*- or *y*-coordinate (could be implied by a correct *x*- or *y*-coordinate) A1	**(2)**

Question number	Working	Answer	Notes	Marks
17(a)	 $2 \times 2 \times 3 \times 7$	$2^2 \times 3 \times 7$	B1	**(1)**

Question number	Working	Answer	Notes	Marks
17(b)	84 = 2 × 2 × 3 × 7 140 = 2 × 2 × 5 × 7 84: 1, 2, 3, 4, 6, 7, 12, 14, 21, **28**, 42, 84 140: 1, 2, 4, 5, 7, 10, 14, 20, **28**, 35, 70,140	28	M1 for attempt to list all factors of each number OR prime factors of both numbers OR $2^2 \times 7$ A1	**(2)**

Question number	Working	Answer	Notes	Marks
18		$\frac{1}{2}m^2$	M1 for any correct simplification using index rules, e.g. $\frac{2m^8}{4m^6}$ A1	**(2)**

Question number	Working	Answer	Notes	Marks
19	1 + 4 = 5 1 750 ÷ 5 = 350 350 × 4 = 1 400	1 400	M1 for fully correct method OR for answer of 350:1 400 A1	**(2)**

Question number	Working	Answer	Notes	Marks
20	$15P = 171 - 96$ $15P = 75$ $P = \frac{75}{15}$	5	M1 $96 + 15P = 171$ or better A1	**(2)**

Question number	Working	Answer	Notes	Marks
21(a)	Accept 3.14, 3.142, $\frac{22}{7}$ or the π button on the calculator as a value of π	Answer in the range 9.80 – 9.83 inclusive	M1 $(\pi \times 2.5^2) \div 2$ or better A1	**(2)**

Question number	Working	Answer	Notes	Marks
21(b)	Accept 3.14, 3.142, $\frac{22}{7}$ or the π button on the calculator as a value of π	Answer in the range 12.8 – 12.9 inclusive	M1 $\left(\frac{\pi \times 5}{2}\right) + 5$ or better A1	**(2)**

Question number	Working	Answer	Notes	Marks
22	(('155' × 11) + ('165' × 12) + ('175' × 14) + ('185' × 13)) = (1705 + 1980 + 2450 + 2405) = 8450 $\frac{\Sigma fx}{50} = \frac{8540}{50}$	170.8	M2 for the addition of 4 products (at least 3 correct) [If not M2, award M1 for multiplication of midpoints (at least 3 correct) by frequencies (without addition) or for the addition of 4 products (at least 3 correct) not using the mid-value where the value is consistently within the interval (including either end)] A1	**(3)**

Question number	Working	Answer	Notes	Marks
23(a)		26.25	M1 21 ÷ '0.8' or 0.8 oe seen A1	**(2)**

Question number	Working	Answer	Notes	Marks
23(b)		Shop A AND 42.5(0) AND 43.2(0)	M1 for 50 × 0.85 (= 42.5) M1 for 60 × 0.8 × 0.9 (= 43.2) A1 Shop A and both correct answers	**(3)**

Question number	Working	Answer	Notes	Marks
24(a)	$8b + 12 - 5b + 35$ $3b + 47$	$3b + 47$	B1 $3b$ B1 + 47	**(2)**

Question number	Working	Answer	Notes	Marks
24(b)	$\frac{y}{4} = x^2$ Accept $x = \sqrt{\frac{y}{4}}$	$x = (\pm)\sqrt{\frac{y}{4}}$	M1 for any one correct step shown A1 oe	**(2)**

Question number	Working	Answer	Notes	Marks
25		Correct perpendicular bisector, e.g. see overlay insert at the end of the mark scheme (±2 mm)	B1 correct pair of arcs B1 correct bisector	**(2)**

Question number	Working	Answer	Notes	Marks
26(a)		0.6 oe	M1 ‘0.75’ × ‘0.8’ A1	**(2)**

Question number	Working	Answer	Notes	Marks
26(b)	Sample space diagram + 1 3 3 5 2 3 5 5 7 4 5 7 7 9 6 7 9 9 11 **Alternative** 1+2=3, 1+4=5, **1+6=7** 3+2=5, **3+4=7**, 3+6=9 3+2=5, **3+4=7**, 3+6=9 **5+2=7**, 5+4=11, 5+6=13	7 with correct working shown	M1 method to find all possible outcomes M1 correctly finds all possible outcomes A1	**(3)**

Question number	Working	Answer	Notes	Marks
27(a)	$3(5x - 8) = 7(3x + 2)$ $15x - 24 = 21x + 14$ $-24 - 14 = 21x - 15x$ oe $-38 = 6x$ $x = \frac{-38}{6}$ $x = \frac{-19}{3}$	$-6\frac{1}{3}$ oe	M1 $15x - 24$ OR $21x + 14$ M1 correctly isolate their terms in x A1	**(3)**

Question number	Working	Answer	Notes	Marks
27(b)	$46 - 35 \geqslant -5x$ $11 \geqslant -5x$ $x \leqslant -\frac{11}{5}$	$x \leqslant -2.2$ oe	M1 for ± 2.2 oe A1	**(2)**

Question number	Working	Answer	Notes	Marks
27(c)		$(x + 8)(x - 8)$ or $(x - 8)(x + 8)$	B1	**(1)**

Question number	Working	Answer	Notes	Marks
27(d)		1 and 3	M1 $(x \pm 1)(x \pm 3)$ M1 $(x - 1)(x - 3)$ OR $(x - 3)(x - 1)$ A1	**(3)**

Question number	Working	Answer	Notes	Marks
28(a)		Positive (correlation)	B1 ignore other words around positive, e.g. weak/strong positive	**(1)**

Question number	Working	Answer	Notes	Marks
28(b)		48−58 inclusive	M1 for appropriate line of best fit A1 53 (±5)	**(2)**

Question number	Working	Answer	Notes	Marks
29	$x = 0.4222\ldots$ $10x = 4.222\ldots$ $100x = 42.222\ldots$ $100x - 10x$ $= 42.222\ldots - 4.222\ldots$ $90x = 38$ $x = \frac{38}{90}$	$\frac{19}{45}$ oe	M1 for multiplying by 2 different powers of 10 OR for $90x = 38$ A1	**(2)**

Question number	Working	Answer	Notes	Marks
30	17×3 OR $\frac{17}{20} \times 60$	51 km/h	M1 for speed in km/min or time in hours A1	**(2)**

Question number	Working	Answer	Notes	Marks
31(a)		1.021×10^8	M1 taking both values out of standard form and adding OR correct answer not in standard form (e.g. 102 100 000 OR 10.21×10^7) A1	**(2)**

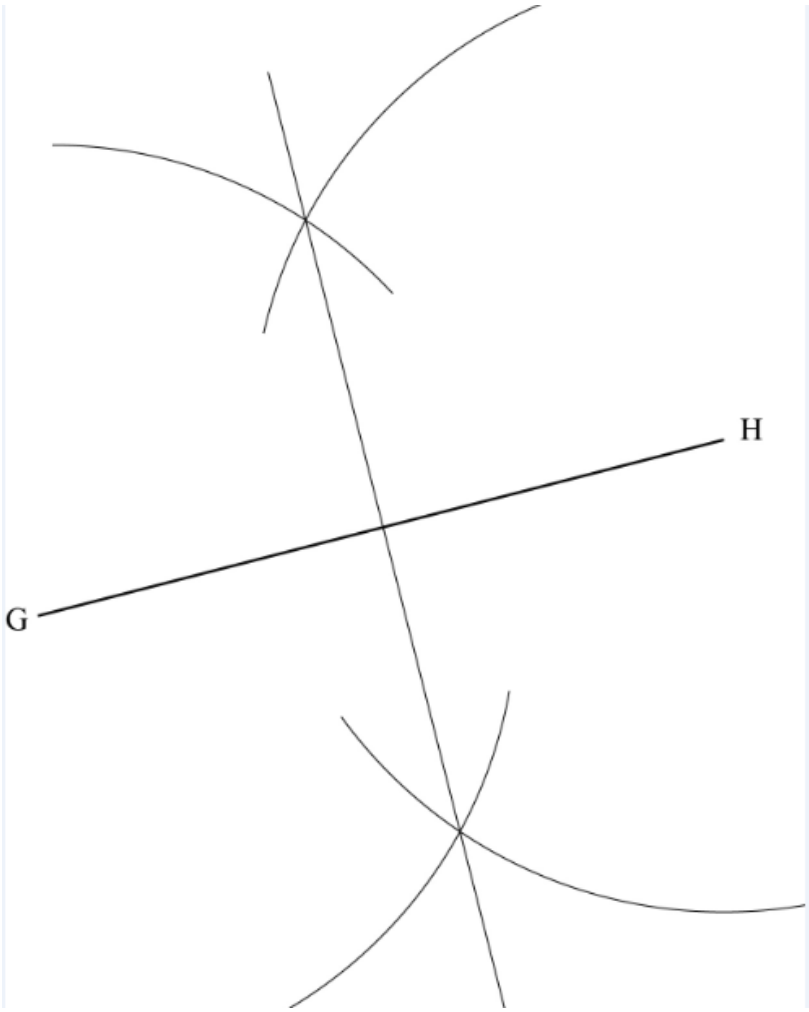
Question number	Working	Answer	Notes	Marks
31(b)		1.124×10^4 OR 11 240	M1 for 1 400 000 − 276 000 (=1 124 000) oe M1 for '1 124 000' ÷ 100 A1	**(3)**

Question number	Working	Answer	Notes	Marks
32(a)		8.66(0254038)	M1 for $a^2 + 11^2 = 14^2$ oe M1 $a = \sqrt{(14^2 - 11^2)}$ A1	**(3)**

Question number	Working	Answer	Notes	Marks
32(b)		6.35 (0852961)	M1 for selecting tan M1 for $\tan 30 = \frac{x}{11}$ OR $x = 11 \times \tan 30$ A1	**(3)**

Question number	Working	Answer	Notes	Marks
33		No and 1 014	M1 $\sqrt[3]{2\,197}$ (=13) M1 '13' × '13' (=169) M1 '169' × 6 (=1 014) A1 Correct decision and correct answer	**(4)**

Q25



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ISBN 978-1-4469-5671-7