Pearson Edexcel International Award in Lower Secondary

Time 1 hour 20 minutes

Paper reference **LMA11/01**

Mathematics

Year 9
Achievement Test

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

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.
- Any diagrams may NOT be accurately drawn unless otherwise indicated.
- 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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Answer ALL questions.

Some questions must be answered with a cross in a box ⊠. If you change your mind about an answer, put a line through the box ⊠ and then mark your new answer with a cross ⊠.

1 Fully simplify

$$6p - 3q + 4p + 9q$$

         $10p + 6q$ $2p - 12q$ $2p + 6q$ $10p - 12q$
         ☒   ☒   ☒   ☒

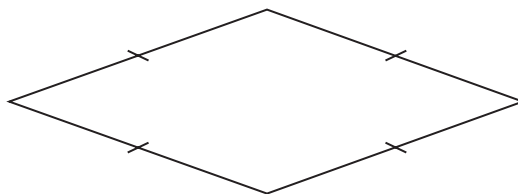**(Total for Question 1 is 1 mark)**

2 How many lines of symmetry does this shape have?

         0   1   2   4
         ☒   ☒   ☒   ☒

(Total for Question 2 is 1 mark)

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3 Which pair of angles are equal because they are corresponding angles?

$$A \diagup B$$
$$C \diagup D$$

$$E \diagup F$$
$$G \diagup H$$
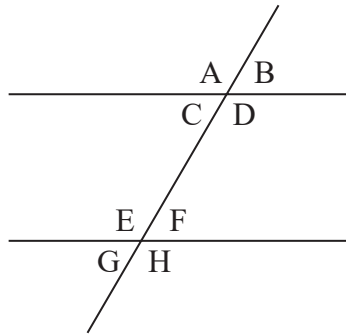
A and E	B and G	C and F	D and A
☒	☒	☒	☒

(Total for Question 3 is 1 mark)

4 Which word describes the shaded part of the circle below?
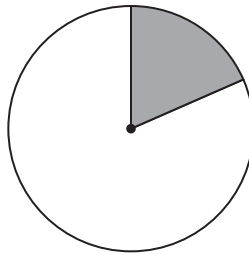
Arc	Radius	Sector	Segment
☒	☒	☒	☒

(Total for Question 4 is 1 mark)

5 What is the highest common factor of 60 and 90?

10	30	180	540
☒	☒	☒	☒

(Total for Question 5 is 1 mark)

6 What is 0.008947 written to 3 significant figures?

0.00895	0.008	0.009	0.00894
☒	☒	☒	☒

(Total for Question 6 is 1 mark)

7 The value of A can be calculated using the formula

$$A = 4b - c$$

When $A = 880$ and $c = 140$, what is the value of b?

185	255	2960	4080
☒	☒	☒	☒

(Total for Question 7 is 1 mark)

P 7 1 1 9 9 A 0 4 2 4

8 The ratio of adults to children at a hotel is $5:3$

There are 120 children at the hotel.

How many adults are there at the hotel?

45 ☒

72 ☒

75 ☒

200 ☒

(Total for Question 8 is 1 mark)

9 What is the value of

$$2\frac{3}{4} \times 1\frac{2}{3}$$

$1\frac{13}{20}$ ☒

$2\frac{1}{2}$ ☒

$4\frac{5}{12}$ ☒

$4\frac{7}{12}$ ☒

(Total for Question 9 is 1 mark)

10 What is the value of

$$4^3 + 25 \times 41 - \sqrt{64} \div 4$$

910.25 ☒

1039 ☒

1085 ☒

1087 ☒

(Total for Question 10 is 1 mark)

11 Use the scatter graph to predict the temperature of a drink that has been made for 20 minutes.

Temperature of drink (°C)

Minutes since drink was made
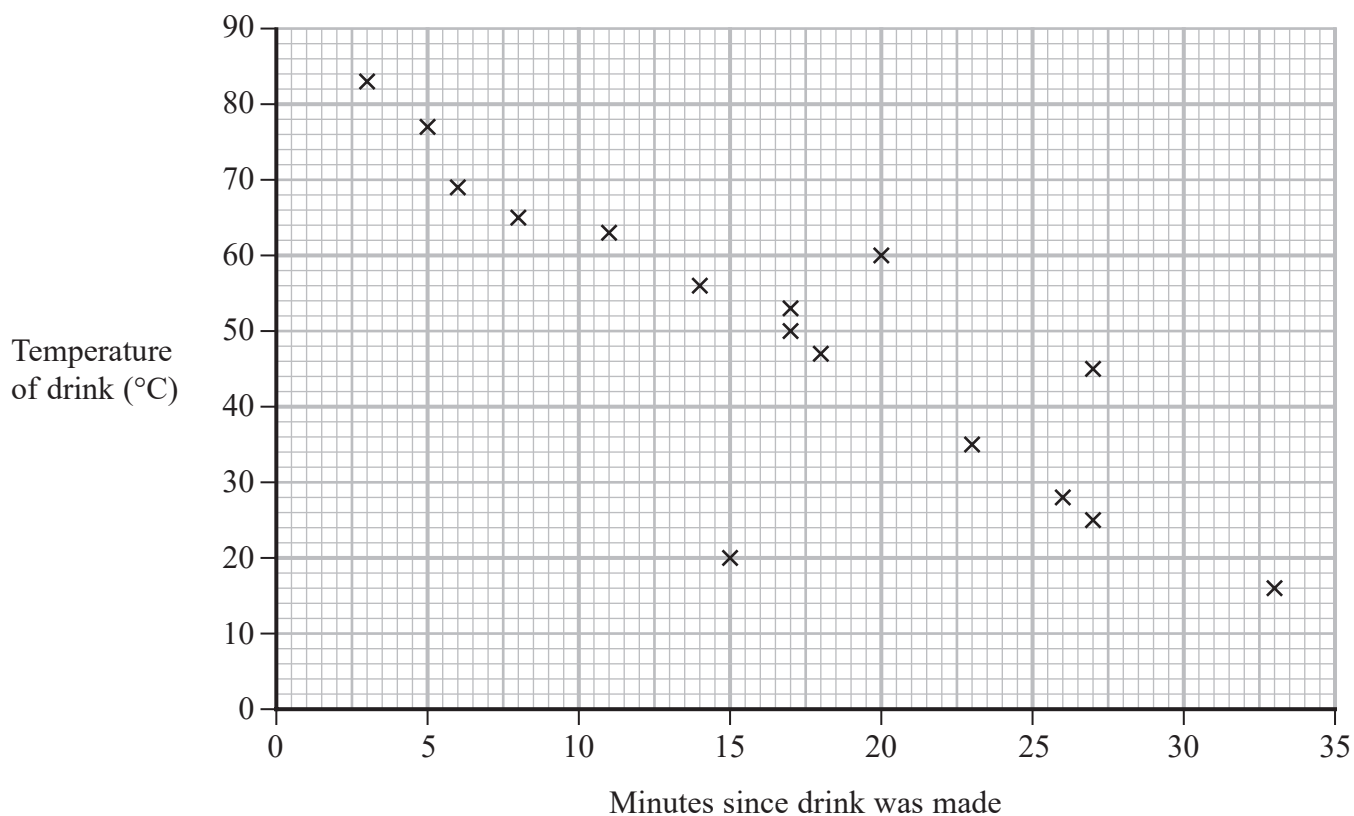
15 °C ☒   30 °C ☒   40 °C ☒   60 °C ☒

(Total for Question 11 is 1 mark)

12 A box contains four counters; one is blue, one is green, one is red and one is yellow.

Another box contains three counters; one is blue, one is green and one is red.

A student takes one counter from each box at random.

What is the probability that the student takes two red counters?

$\dfrac{2}{7}$ ☒ $\dfrac{1}{12}$ ☒ $\dfrac{7}{12}$ ☒ $\dfrac{1}{21}$ ☒

(Total for Question 12 is 1 mark)

13 Factorise

$$x^2 - 7x + 6$$

$(x - 1)(x - 6)$	$(x + 1)(x + 6)$	$(x - 1)(x + 6)$	$(x + 1)(x - 6)$
☒	☒	☒	☒

(Total for Question 13 is 1 mark)

14 Find a solution to the equation

$$x^2 - 34 = 290$$

16	18	128	162
☒	☒	☒	☒

(Total for Question 14 is 1 mark)

15 Which integers satisfy the inequality shown on the number line?
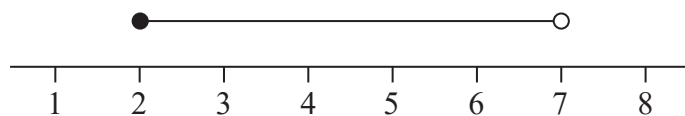
3,4,5,6	3,4,5,6,7	2,3,4,5,6,7	2,3,4,5,6
☒	☒	☒	☒

(Total for Question 15 is 1 mark)

TOTAL FOR SECTION A IS 15 MARKS

Turn over ▶

SECTION B

Answer ALL questions.

16 (a) Share $420 in the ratio $3:4$

$... $...

(2)

(b) Write 420 as a product of its prime factors.

You must show your working.

....

(2)

(Total for Question 16 is 4 marks)

17 The straight line M is drawn on the grid below.
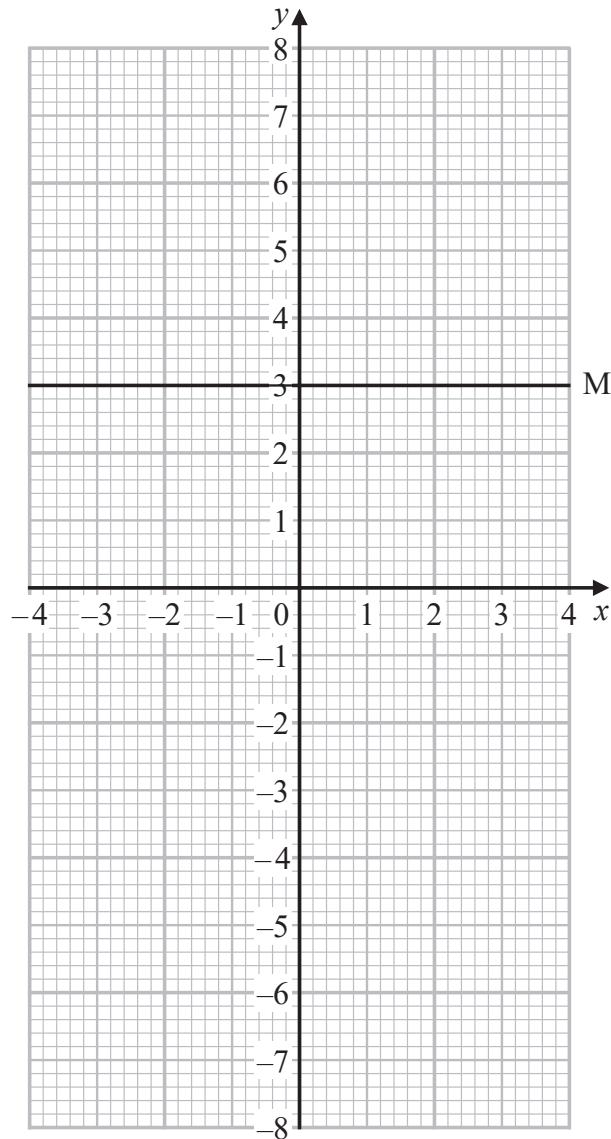
(a) What is the equation of the line M?

....

(1)

(b) On the grid above, draw the graph of $y = 2x - 1$ for values of x from -3 to 3

(2)

A different straight line, N, has a gradient of 7 and passes through the point $(0, 8)$

(c) Write down the equation of the line N

....

(1)

(Total for Question 17 is 4 marks)

Turn over ▶

18 (a) Find the perimeter of the shape below.

12 cm

Diagram **NOT** accurately drawn

8 cm

4 cm

3 cm

3 cm
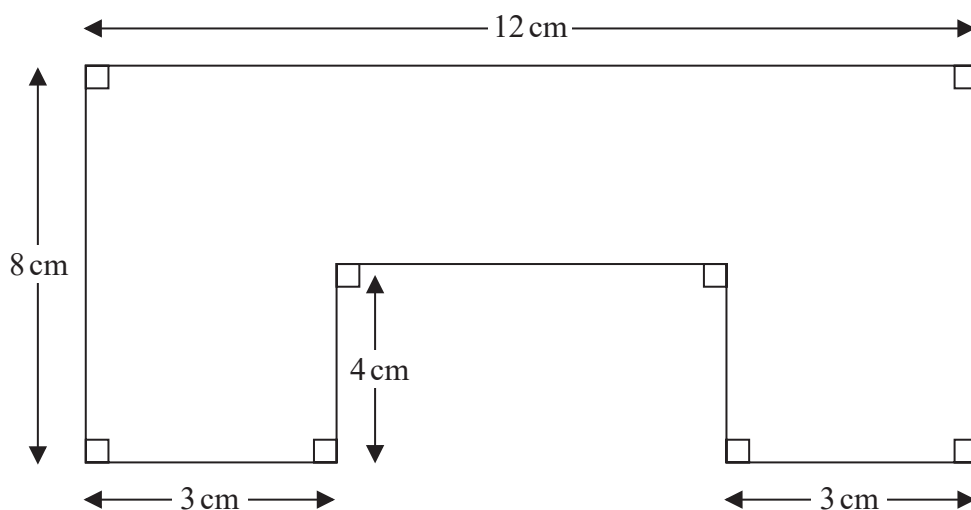
.... cm

(2)

(b) Select a word from the box to identify **each** of the shapes being described below.

Square	Rectangle	Parallelogram	Rhombus	Trapezium	Kite

Two pairs of equal sides, perpendicular diagonals, only one line of symmetry	
Four equal sides, only two lines of symmetry, two pairs of equal angles	
Two pairs of equal sides, only two lines of symmetry, four right angles	
Two pairs of equal sides, no lines of symmetry, two pairs of equal angles	

(2)

(Total for Question 18 is 4 marks)

19 80 children took part in either track or field events.

	Track	Field	Total
Boys		12	35
Girls	19		
Total			80

How many children took part in field events in total?

....

(Total for Question 19 is 2 marks)

20 (a) Which of these is the largest?

$$2.394 \times 10^4 \qquad 5.67 \times 10^5 \qquad 9.8 \times 10^3$$

....

(1)

(b) Work out

$$1.2 \times 10^7 + 2.3 \times 10^6$$

Give your answer in standard form.

....

(2)

(Total for Question 20 is 3 marks)

21 (a) The first term of a sequence is 7
The term-to-term rule of the sequence is 'subtract 19'

What is the third term of this sequence?

....
(1)

(b) The nth term of a different sequence is $n^2 + 4n$

Write down the first three terms of this sequence.

....
(2)

(c) Felix writes a sequence that starts with 4 and has the term-to-term rule 'add 7'
Oluwatoni writes a sequence with nth term $5n + 4$

What is the smallest number that is in both of their sequences?

....
(3)

(Total for Question 21 is 6 marks)

22 Using ruler and compasses, construct the bisector of the angle.

You must show all your construction lines.

(Total for Question 22 is 2 marks)

23 Tayyibah and Aston both want to find out how much money students bring to school.

Tayyibah asks all 30 students in her form.
Aston asks 50 students that he chose at random from the whole school.

Give **two** reasons why Aston's sampling method is better than Tayyibah's.

1 ....

....

2 ....

....

(Total for Question 23 is 2 marks)

24 (a) Find 17.5% of 140 kg.

.... kg
(2)

(b) A teacher leaves $7500 in a bank account for two years.

The account pays compound interest of 2.5% per year.

Calculate the total amount the teacher has in the account at the end of the two years.

$ ....
(2)

(c) The cost of a car is reduced from $39000 to $35880

Calculate the percentage decrease in the cost of the car.

.... %
(2)

(Total for Question 24 is 6 marks)

25 (a) Paige takes her parents out for dinner.

Paige's dinner costs twice as much as her mother's dinner.

Her father's dinner costs $12 more than her mother's dinner.

The total cost of their dinners is $96

How much was Paige's dinner?

$ ....
(3)

(b) On the way home, Paige buys each of her parents some desserts.

She buys her father 4 doughnuts and 5 cupcakes for $12.81

She buys her mother 3 doughnuts and 4 cupcakes for $9.93
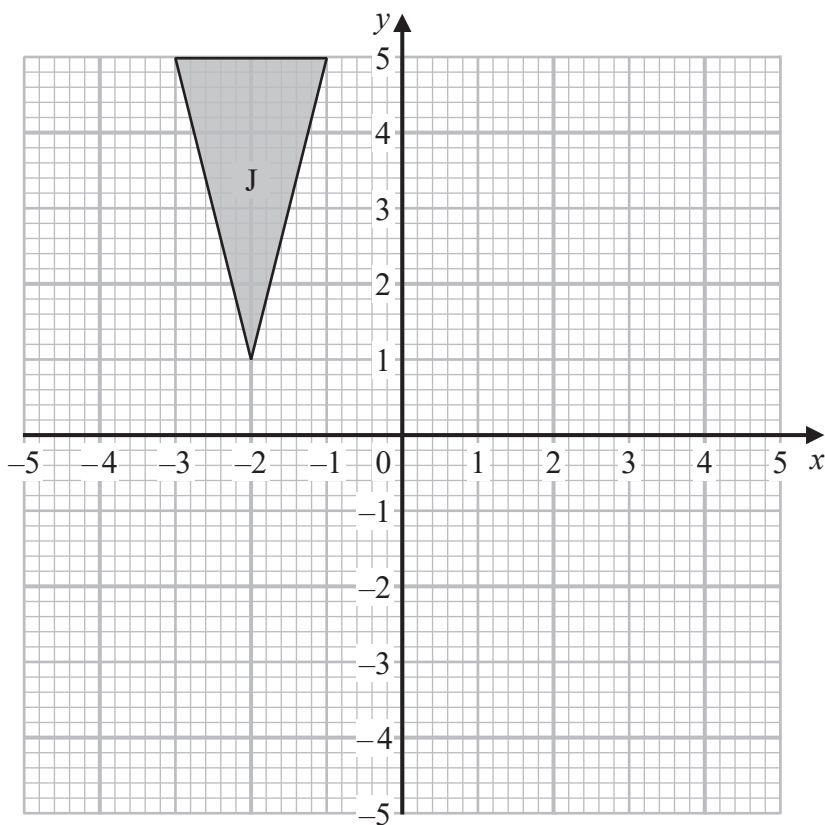
What is the cost of 1 doughnut and 1 cupcake?

Doughnut $ ....

Cupcake $ ....
(4)

(Total for Question 25 is 7 marks)

26 (a) Triangle J is drawn on the coordinate grid below.

(i) Reflect triangle J in the *x* axis.
Label the new triangle K

(1)

(ii) Translate triangle J by 4 squares to the right and 6 squares down.
Label the new triangle L

(1)

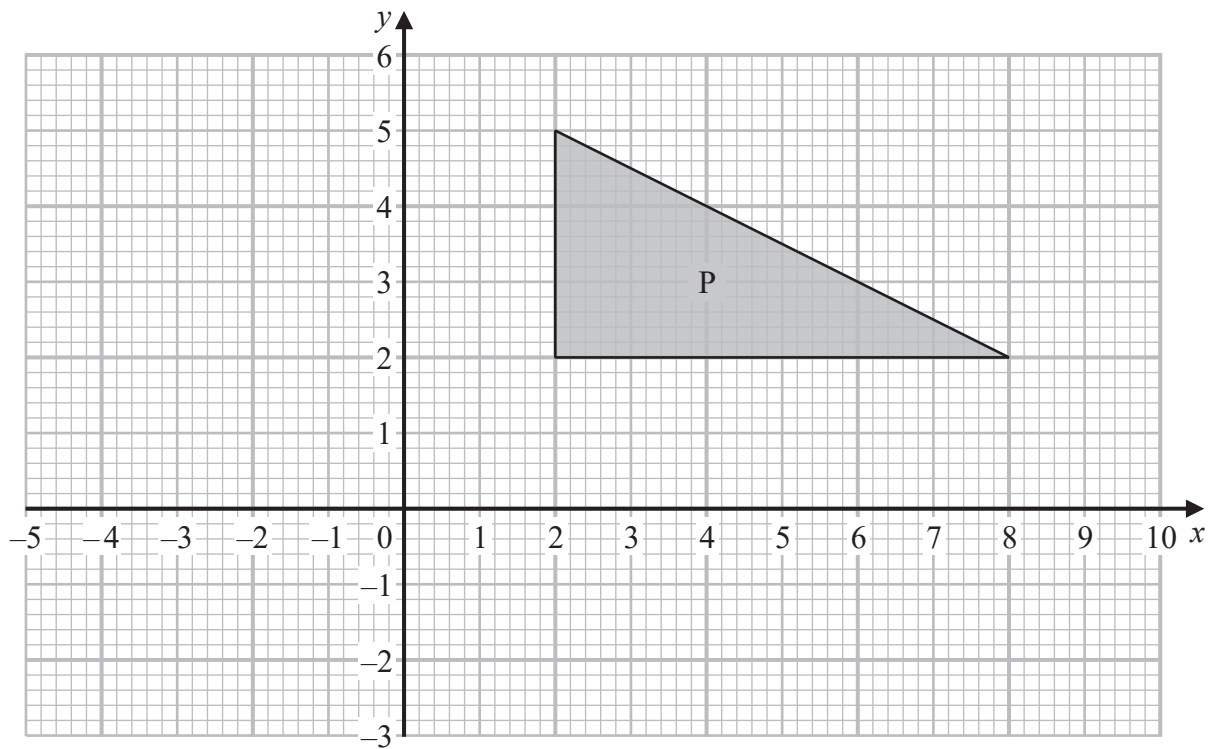(iii) Describe fully the single transformation that maps triangle K onto triangle L

....

....

....

(2)

(b) On the grid below, enlarge shape P with scale factor $-\frac{1}{3}$ and centre (–1, –1)

(3)

(Total for Question 26 is 7 marks)

27 The table shows the number of goals scored by each of 24 football teams.

Goals	0	1	2	3
Frequency	2	7	10	5

Calculate the mean number of goals scored per team.

....

(Total for Question 27 is 3 marks)

Turn over ▶

28 Nasheen has 250 centimetres of ribbon to wrap two presents.

- The first present needs $\dfrac{3}{4}$ m of ribbon.

- The second present needs 1.76 m of ribbon.

Does Nasheen have enough ribbon to wrap both presents?

You must show your working.

....

(Total for Question 28 is 2 marks)

29 The triangle ABC is equilateral.
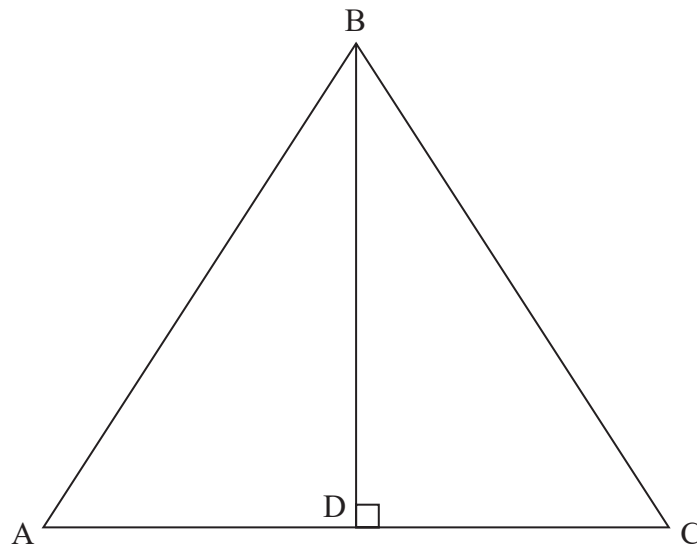
Diagram **NOT** accurately drawn

Prove that BAD is congruent to BCD

....

(Total for Question 29 is 3 marks)

30 A box contains 12 pens.

4 of the pens are red, 5 of the pens are blue and 3 of the pens are green.

A teacher takes one pen from the box at random.

(a) What is the probability that the teacher takes:

(i) a blue pen?

....
(1)

(ii) a purple pen?

....
(1)

(b) The teacher uses one red pen and one green to complete his marking.

The probability that his red pen runs out is 0.21
The probability that his green pen runs out is 0.13

What is the probability that only one of his pens runs out?

....
(3)

(Total for Question 30 is 5 marks)

31 The weight of one apple is 103 g to the nearest gram.

The weight of another apple is 107 g to the nearest gram.

Work out the lower bound for the total weight of both apples.

.... g

(Total for Question 31 is 2 marks)

32 Two runners started at the same point and ran in different directions.

One ran 158 metres in a straight line heading north and stopped.
The other ran 139 metres in a straight line heading west and stopped.

What was the distance between the runners when they stopped?

Give your answer to one decimal place.

.... metres

(Total for Question 32 is 3 marks)

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

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