General Certificate of Secondary Education
June 2006

MATHEMATICS (SPECIFICATION A)   **3301/2F**
Foundation Tier
Paper 2 Calculator

F

AQA

ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Monday 12 June 2006   9.00 am to 10.30 am

For this paper you must have:
- a calculator
- mathematical instruments

Time allowed: 1 hour 30 minutes

Instructions
- Use blue or black ink or ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- Answer the questions in the spaces provided.
- Do all rough work in this book.

Information
- The maximum mark for this paper is 100.
- The marks for questions are shown in brackets.
- You may ask for more answer paper, graph paper and tracing paper. They must be tagged securely to this answer booklet.

Advice
- In all calculations, show clearly how you work out your answer.

**3301/2F**

Formula Sheet: Foundation Tier

You may need to use the following formula:

Area of trapezium $= \frac{1}{2}(a+b)h$
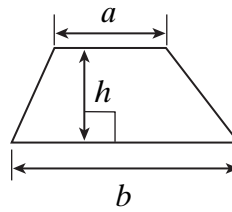
Answer **all** questions in the spaces provided.

1 From this list of numbers

$$3 \quad 7 \quad 12 \quad 15 \quad 21 \quad 24 \quad 32 \quad 36 \quad 42$$

(a) write down the multiples of 8

Answer .... *(2 marks)*

(b) write down the factors of 45

Answer .... *(2 marks)*

(c) write down the square number.

Answer .... *(1 mark)*

2 A line *AB* is shown on the grid.
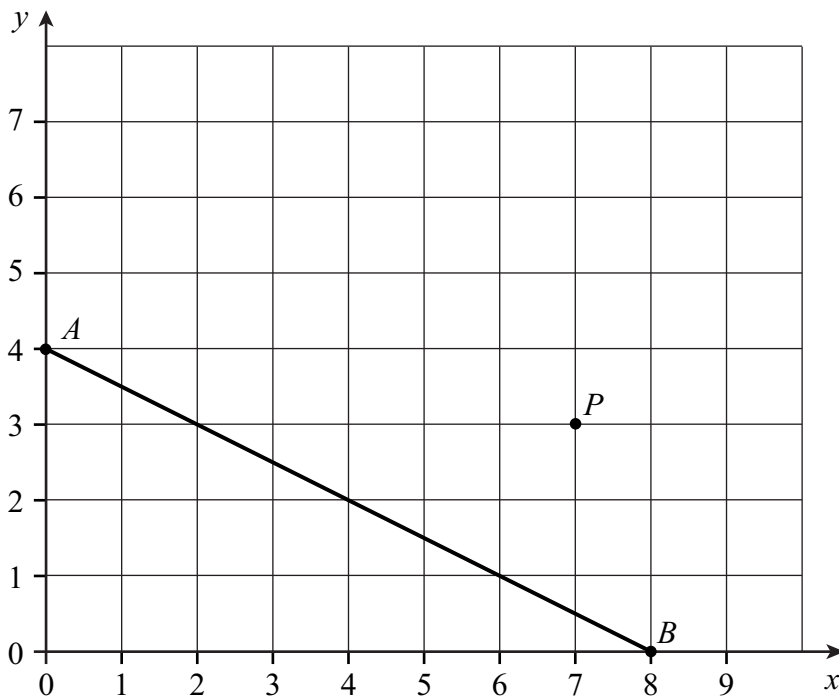
(a) Mark the mid-point of *AB*.
    Label it *M*.

(1 mark)

(b) Write down the coordinates of *M*.

Answer (................ , ...) *(1 mark)*

(c) Draw a line through the point *P*, parallel to the line *AB*. *(1 mark)*

Turn over ▶

8

3 Here is a sequence of numbers

> 54 51 48 45 42 ……

(a) Write down the next number in the sequence.

....

      Answer ....   *(1 mark)*

(b) Write down the rule for continuing the sequence.

....

....
   (1 mark)

4 (a) *C* is the centre of the circle and *A* is a point on the circumference.
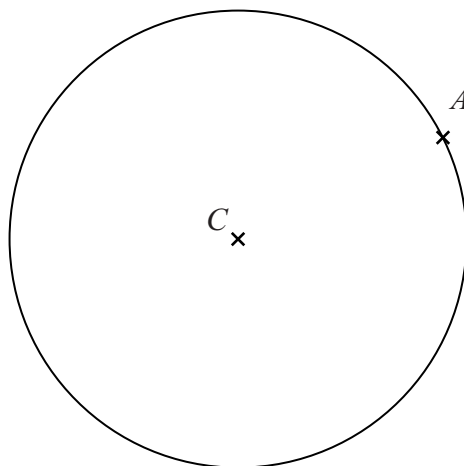
  (i) Draw the diameter from *A*.

  (ii) Draw the tangent at *A*.

   (2 marks)

(b)   These are the nets of two solids.
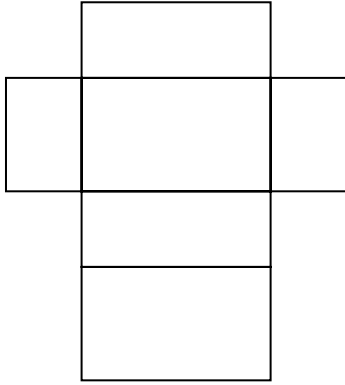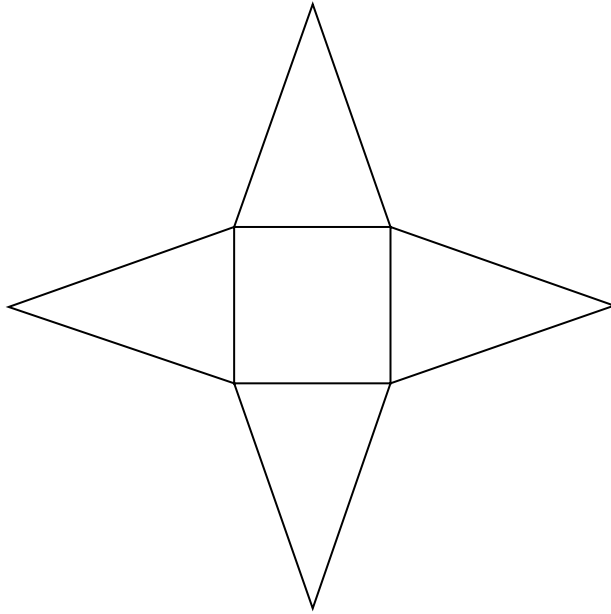
Net A   Net B

What are the names of the solids?

Answer Net A ....

Net B ....

(2 marks)

Turn over for the next question

6

5 Which **two** of these fractions are equivalent to $\dfrac{1}{5}$?

$$\dfrac{3}{15} \qquad \dfrac{5}{75} \qquad \dfrac{8}{20} \qquad \dfrac{6}{30} \qquad \dfrac{21}{25}$$

....

Answer .... *(2 marks)*

6 (a)
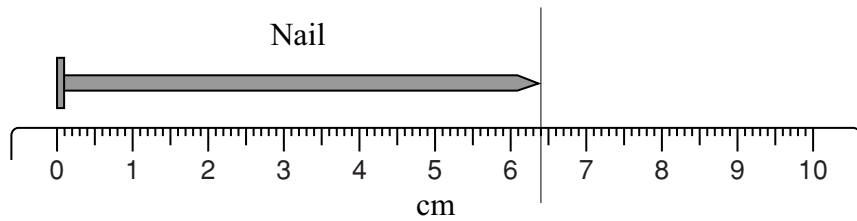
Nail

How long is the nail?

Answer .... cm *(1 mark)*

(b)

200   300   400
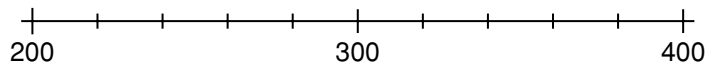
On this number line, mark the position of 270.

(1 mark)

7 (a) The Sun is ninety-three million miles away from the Earth.
Write this number in figures.

Answer .... *(1 mark)*

(b) The circumference of Jupiter is 276 498 miles.

(i) What is the value of the 6?

Answer .... *(1 mark)*

(ii) Round 276 498 to the nearest 100.

Answer .... *(1 mark)*

Turn over for the next question

Turn over ▶ | 7 |

8 (a) Draw the reflection of the shape in the mirror line.

mirror line
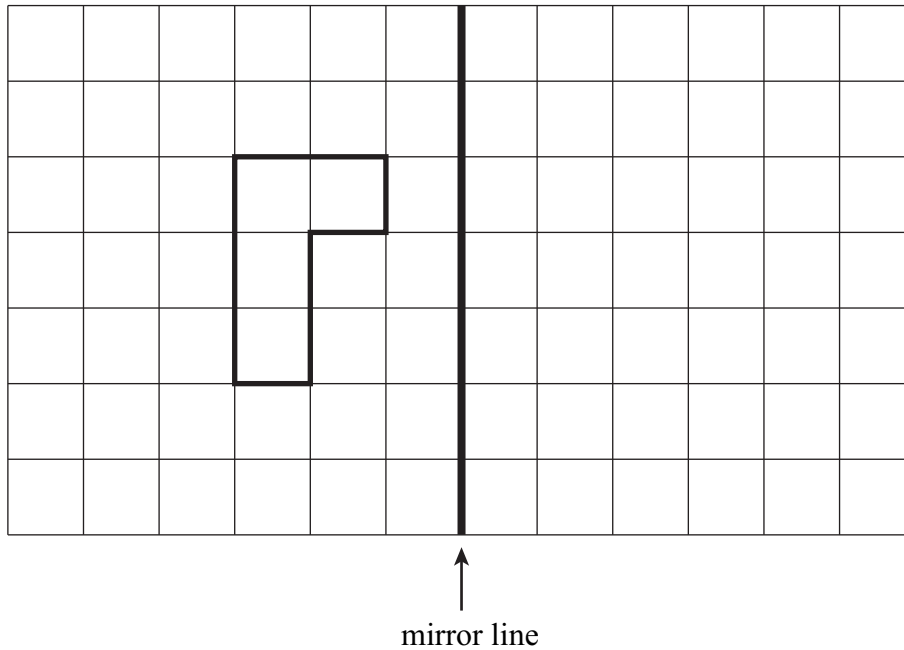
(2 marks)

(b) The table gives the names of some 4-sided shapes and their symmetries.
Complete the table.

Name of 4-sided shape	Symmetries	
Square	Number of lines of symmetry	4
	Order of rotational symmetry	4
…………………	Number of lines of symmetry	2
	Order of rotational symmetry	2
Parallelogram	Number of lines of symmetry	…
	Order of rotational symmetry	…

(3 marks)

9 Dianne is organising a meal for a group of her friends.

---

2 courses
for £7.95

Main Course	**Dessert**
Lasagne	Gateau
Steak	Fruit
Pizza	

When there are more than 10 people in a group there is a reduction of £1.50 per person.

(a) Dianne chooses Lasagne followed by Gateau.
Her choice is shown in the table.
List, in the table, all the possible choices of main course and dessert.

Main Course	**Dessert**
Lasagne	Gateau

(2 marks)

(b) There are 16 people in Dianne's group.
As there are more than 10 people in the group, there is a reduction of £1.50 per person.
Calculate the total cost of the meal for the 16 people.

....

....

....

Answer £ .... *(3 marks)*

10 (a) The number of text messages sent by three sisters in one week is shown in the pictogram.

Key | t | e | represents 20 text messages
       | x | t |

| Natalie | | t | e | | t | e | | t | e | |
| | | x | t | | x | t | | x | t | |

| Emma | | t | e | | t | |
| | | x | t | |

| Jody | |

(i)   How many text messages did Natalie send?   Answer ....

(ii) How many text messages did Emma send?   Answer ....

(iii) Jody sent 50 text messages.
      Complete the pictogram to show this.

(3 marks)

(b) The pie chart shows the proportion of pupils with mobile phones in a year 11 class.

Do not have a phone

Have a phone

(i) Measure and write down the size of the angle for the pupils who do not have a phone.

Answer .... degrees   *(1 mark)*

(ii) 5 pupils in the class do not have a mobile phone.
How many pupils are in the class?

....

....

Answer ....   *(1 mark)*

(c) These two pie charts show the results from a survey on mobile phone use.

Mobile phone use by 16 year olds   **Mobile phone use by adults**
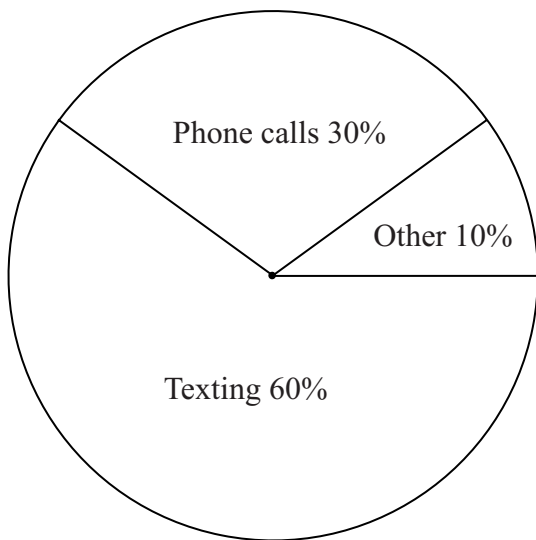
Phone calls 30%

Other 10%

Texting 60%

Phone calls 55%

Other 8%

Texting 37%
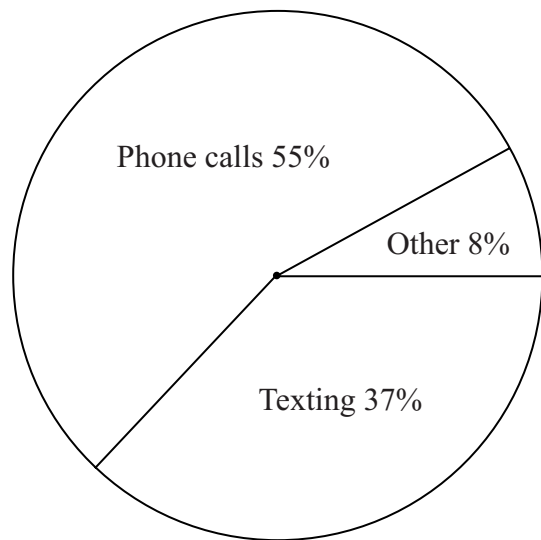
Write down **one** comparison between the way that 16 year olds and adults use mobile phones.

....

....

....

(1 mark)

Turn over ▶

6

11 Josh is buying as many batteries as he can for £10.
The batteries cost £1.29 each.

(a) How many can he buy?

....

....

Answer .... *(1 mark)*

(b) How much change does he get from a £10 note?

....

....

Answer £ .... *(2 marks)*

12 The rule for working out a taxi fare is

> £1.40
> plus
> 75 p per mile

(a) Jo travels 2 miles.
Work out her fare.

....

....

Answer £ .... *(2 marks)*

(b) Sam's taxi fare is £5.15
How many miles did he travel?

....

....

....

Answer .... miles *(3 marks)*

13 (a)

78°

x

144°
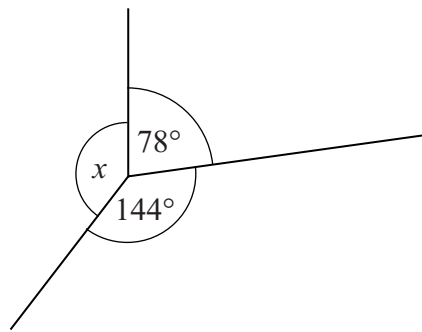
Not drawn accurately

(i) What types of angle are 78° and 144°?

Answer 78° is ....

144° is ....   *(2 marks)*

(ii) Work out the value of *x*.

....

....

Answer *x* = ... degrees   *(2 marks)*

(b)

65°

75°   50°

A   *B*   *C*
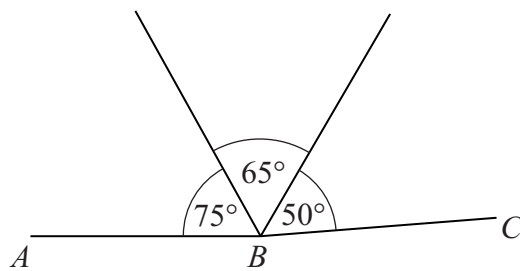
Not drawn accurately

Jasmine says that if this diagram was drawn accurately then *ABC* would be a straight line.
Is she right?
You **must** explain your answer.

....

....

....

(2 marks)

Turn over ▶

14

14 Solve the equations.

(a) $3x = 21$

....

....

Answer $x =$ ....   *(1 mark)*

(b) $y - 2 = 9$

....

....

Answer $y =$ ....   *(1 mark)*

(c) $4z - 1 = 9$

....

....

....

Answer $z =$ ....   *(2 marks)*

(d) $3t + 4 = 19 - 2t$

....

....

....

....

Answer $t =$ ....   *(3 marks)*

15 The cost of a holiday is made up of three parts.

accommodation + insurance + travel

City break to Paris

3 nights

Total cost of £ 245

The accommodation for this holiday costs £52 each night.
The insurance costs £26.
How much does the travel cost?

....

....

....

....

Answer £ .... *(4 marks)*

Turn over for the next question

16   (a)   Complete the table of values for $y = 3x + 4$

x	0	1	2	3	4	5
y	4		10		16	19

(1 mark)

....

....

(b)   On the grid draw the graph of $y = 3x + 4$ for values of x from 0 to 5.
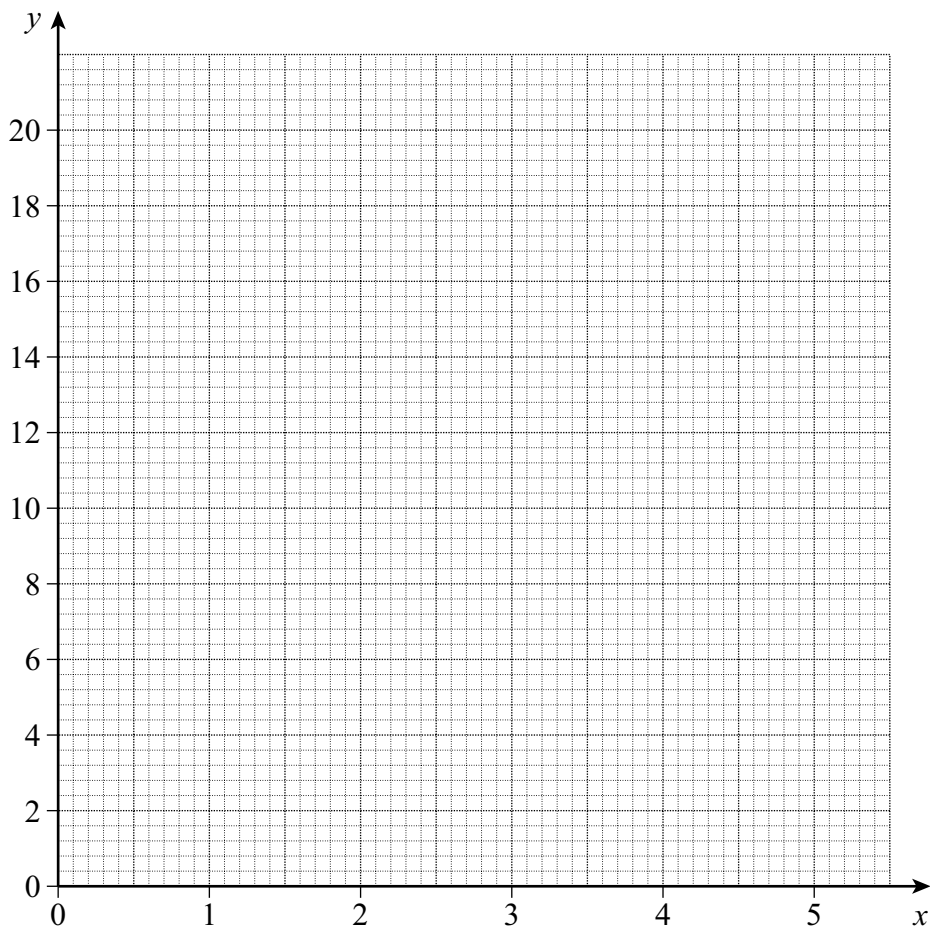
(2 marks)

(c)   On the grid draw and label the line $x = 2.5$

(1 mark)

17 (a) Write these decimals in order, smallest first.

$$0.4 \qquad 0.308 \qquad 0.35$$

Answer .... *(1 mark)*

(b) Write 15.2864 to 2 decimal places.

Answer .... *(1 mark)*

(c) Work out

(i) $\dfrac{1}{12.5}$

....

Answer .... *(1 mark)*

(ii) $\dfrac{4.5}{0.6^2}$

....

....

Answer .... *(1 mark)*

(d) Hassan says

> When you square a positive number the answer is **always** bigger than the original number.

For example

$$2.5^2 = 6.25 \qquad \text{and} \qquad 6.25 \text{ is bigger than } 2.5$$

Find an example to show that Hassan is wrong.
You **must** show your working.

....

....

....

(2 marks)

Turn over ▶

10

18 (a) The map shows the positions of three places.

Scale: 1cm represents 4 miles

North

Lancaster

North

Southport
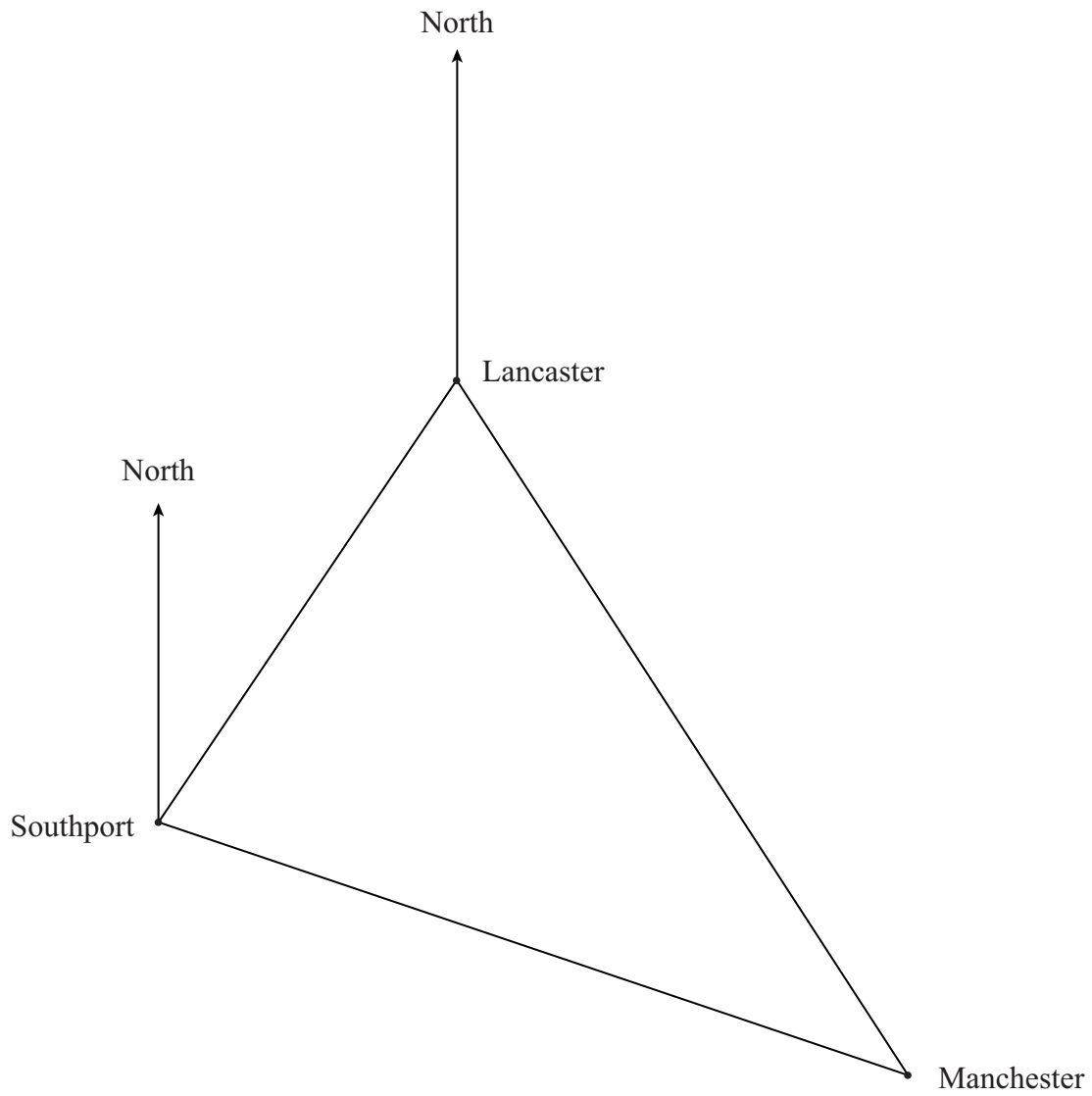
Manchester

(i) What is the bearing of Lancaster from Southport?

....

Answer .... degrees   *(1 mark)*

(ii) What is the bearing of Manchester from Lancaster?

....

Answer .... degrees   *(1 mark)*

(iii) Work out the distance in miles from Manchester to Southport.

....

....

....

Answer .... miles   *(3 marks)*

(b) The distance from Lancaster to London is 240 miles.
Marianna takes 5 hours to travel from Lancaster to London.
Calculate her average speed in miles per hour.

....

....

....

Answer .... miles per hour   *(2 marks)*

Turn over for the next question

19 (a) Calculate 36 % of £420.

....

....

....

Answer £ .... *(2 marks)*

(b) What percentage is £84 of £240?

....

....

....

Answer .... % *(2 marks)*

20 A two-stage operation is shown.

Input ⟶ | Multiply by 3 | ⟶ | Add 7 | ⟶ **Output**

(a) When the input is –2 what is the output?

....

....

Answer .... *(1 mark)*

(b) When the input is *n* what is the output?

....

Answer .... *(2 marks)*

21 A rounders coach records the number of rounders the players in her squad scored in a season.
All the players scored at least once.
She shows the data in a stem and leaf diagram.

Key $\begin{array}{|c|c}2 & 7\end{array}$ represents 27 rounders scored

0	1	1	2	7
1	2	5	5	
2	3	7		
3	6			
4	0			
5	0	9		

(a) What is the range of the data?

....

....

Answer .... *(1 mark)*

(b) How many players are there in the squad?

....

....

Answer .... *(1 mark)*

(c) What is the median number of rounders scored?

....

....

Answer .... *(1 mark)*

(d) Calculate the mean number of rounders scored.

....

....

....

Answer .... *(3 marks)*

Turn over ▶

13

22 Divide £438 in the ratio 5:1

....

....

....

....

Answer £ .... and £ .... *(2 marks)*

23 A circular pond has a diameter of 6 m.
Calculate its circumference.

....

....

....

Answer .... m *(2 marks)*

24 Use a ruler and compasses to construct a rhombus that has sides of 6 cm and whose shorter diagonal is 4 cm.

(4 marks)

END OF QUESTIONS

8

There are no questions printed on this page