# Aldenham School

11+ Sample Paper

Subject: Mathematics

Time allowed: 45 mins

Instructions:

- Write your answers in the spaces provided in this booklet
- Show sufficient method to show how you obtained your answers
- Calculators MUST NOT be used in any question.
- Rulers may be used.

Mark: _____ / 55   %: _____

1. The diagram shows the distances in miles between some cities.

Not drawn accurately
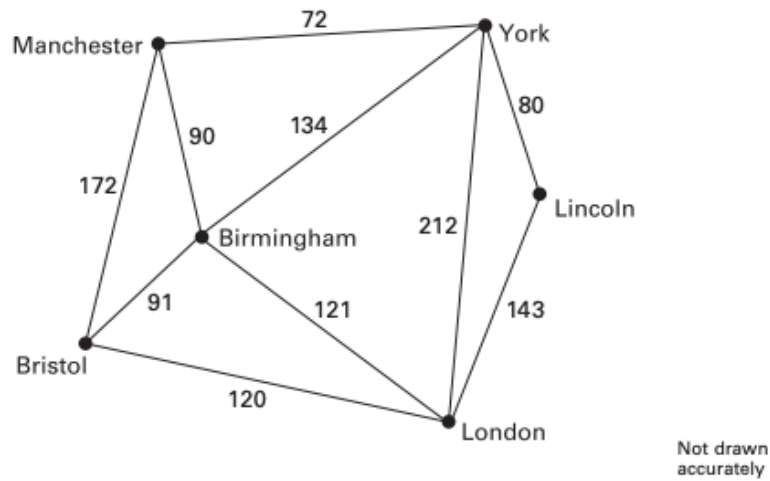
1a Which two cities are 121 miles apart?

....

[1]

1b Josh is travelling from Bristol to York.

How much further is his journey if he travels via London, compared to travelling through Birmingham?

....

[2]

2 A newspaper gives the crowd at a concert as 18,500 the nearest 100.
Which number could have been the actual crowd size?

(circle your answer)

18,599   18,439   18,487   19,500   [1]

3. Work out the following calculations

a) 284 x 46

.... [2]

b) 142.5 ÷ 3

.... [1]

4 A radio station recorded how many listeners it had each month.

Radio listeners	
Month	**Number of listeners**
August	9,837
September	9,828
October	9,839
November	9,852
December	9,818

What is the range of the numbers?

.... [1]

5. Which statement is true?
    (Circle your answer)

            A   24 x 70 = 48 x 35   B   24 x 70 = 12 x 35

            C   24 x 70 = 48 x 46   D   24 x 70 = 48 x140

[1]

6. Fill in the gaps

    a)   …..   x 6   = 420   b) $\sqrt{25}$ + $\sqrt{36}$ = …….

    c)   80 x   0.4 = ……   d)   ……   +   15   = 12

[4]

7. Place these seven numbers in the correct places in the Venn Diagram.

            4   6   9   16   24   25

| Square numbers | Factors of 36 ; |
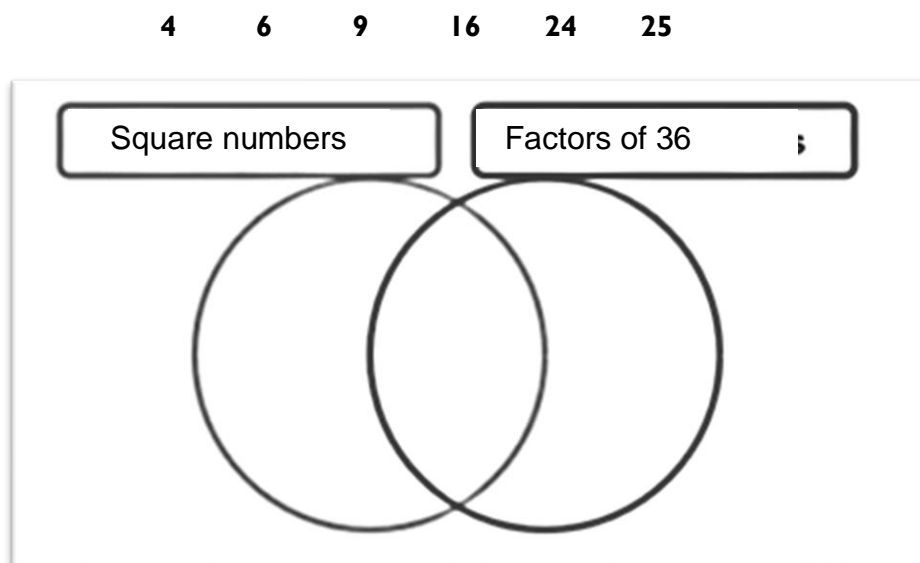
[3]

8.   In 2019 the cost of a bike was £240.

      In 2020 the same bike was now sold for 15% more than in 2019.

      How much did the bike cost in 2020?

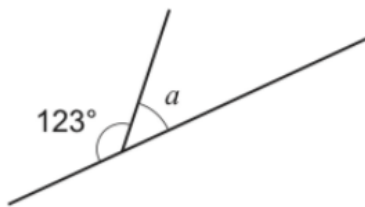   £ ....
                                                                                           [2]

9.   Clem has £6.

      She spends some money in the shop and gets 50p change.
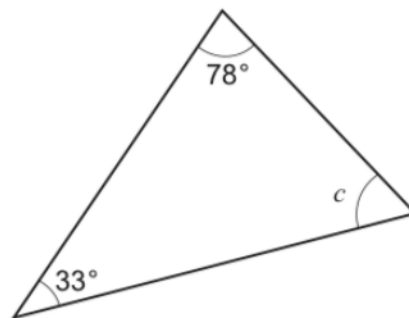
      What fraction of her money did she spend? Simplify your answer.

                                                        ....
                                                                                           [2]

10.   Calculate the size of the missing angles.

      $a =$ .... °

                                                        $c =$ .... °
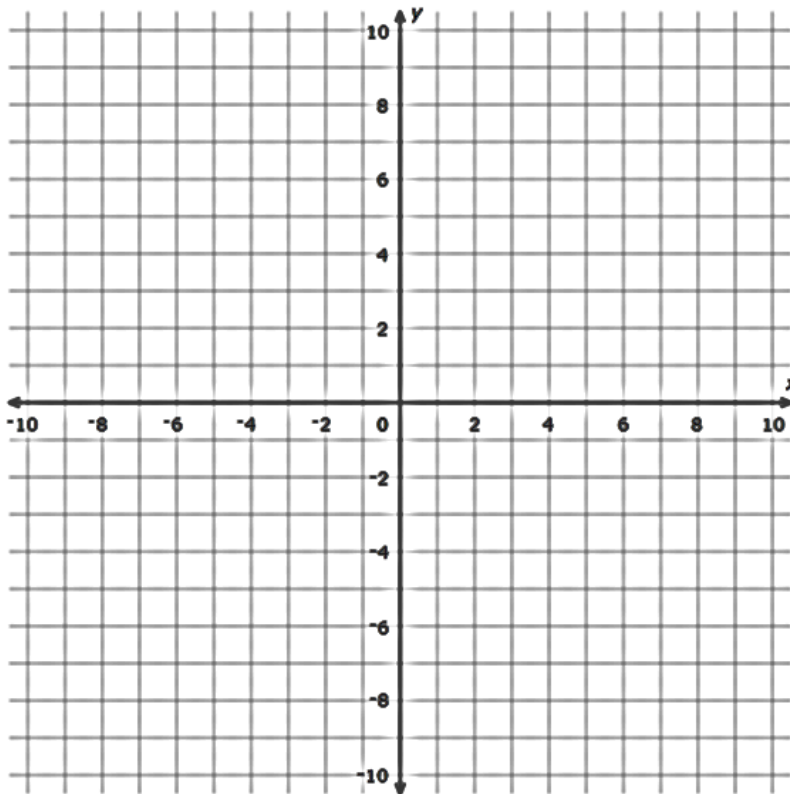   [2]

11.   Three vertices of a rectangle are (-4, 3), (0, 7) and (8, -1).
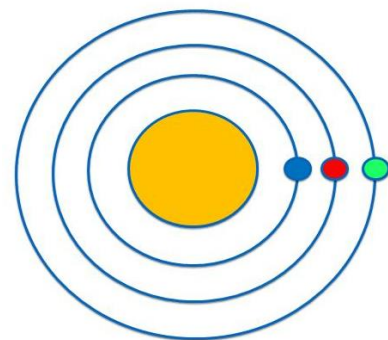
11a.   Plot these points on the axes below.

[2]

11b.   Write down the co-ordinate of the missing vertex of the rectangle.

....

[1]

12.   Three planets orbit around a star.

In 2021 they are all lined up as shown in the diagram.

- Planet one takes 8 years to travel round the star.
- Planet two takes 12 years to travel round the star.
- Planet three takes 16 years to travel round the star.

In which year will the planets all line up again?

...................................[2]

13   Joyleen is making fruit smoothies.
      The pictogram shows information about the number of each type of fruit she has.

Key: ◯ represents 4 fruits

Oranges	◯ ◯ ◯ ◯ ◖
Kiwi fruits	◯ ◯ ◗
Bananas	◯ ◔

      This is the recipe for one smoothie.

      3 oranges
      2 kiwi fruits
      $1\frac{1}{2}$ bananas

      Work out the maximum number of smoothies that Joyleen can make.

.... smoothies [2]

14.   If these fractions were ordered from smallest to largest, which fraction would be in the **3rd position**?

$$\frac{1}{4} \qquad \frac{1}{2} \qquad \frac{3}{8} \qquad \frac{15}{16} \qquad \frac{6}{8}$$

....
[1]

15)   Circle the largest amount in 15a and 15b below

15a)   ½ of 1.2 kg   or   2 x 400g

15b) $\dfrac{2}{5}$ or   35%

[2]

16.   Work out $\dfrac{4}{5} + \dfrac{2}{3}$.

Write your answer as a mixed fraction.

…….…..………..
[2]

17.   Given that **a = 4**, **b = 7** and **c = -2** complete the following expressions with <, > or =.

17a)   a   …………..   c + b

17b) $2a^2$ …………..   8a

[2]

18. Dr Mepham had an enormous chocolate bar which she shared amongst the students in her Further Maths A level class.

She gave each of her students one-twelfth of the chocolate bar.

One third of the bar was left.

How many students did she have in her class?

……………………………...………….. children

[1]

19a Use the rule to write the next two numbers for each sequence.

Rule: Double the last number then add 1

2   5   11   ...

…………   …………

[1]

19b The rule for continuing a different sequence is

Double the previous term and add 5

The third term of this sequence is 27.

Work out the first term.

………………………

[1]

20 Which is these calculations has the highest answer?

A   1 x 2 + 3 + 4   B   1 + 2 x 3 + 4

C   1 x 2 + 3 x 4   D   1 + 2 x 3 x 4   E   1 x 2 x 3 x 4   [1]

21a)   Solve the following equation

$$6x = 66$$

x =……………………..

[1]

22b)   Solve the following equation to find b.

$$10b - 3 = 27$$

b = …………………..

[2]

22.   Four grandchildren in a room are 2, 3, 5 and 10 years old.

The mean age of the grandchildren in the room increases by 2 years when a fifth grandchild enters.

How old is the fifth grandchild?

……………………..

[2]

23.   Myla wants to carpet her bedroom floor with tiles.

The floor is a rectangle measuring 5 metres by 3 metres.

Carpet tiles

25 cm by 25 cm

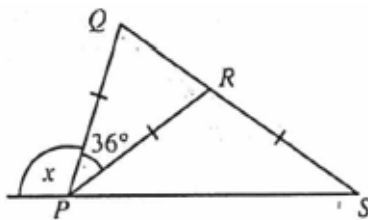The tiles measure 25cm by 25cm. They cost £1.50 each.

Myla buys the exact number of tiles needed and is given a 20% discount.

How much does she pay?

£ ....

[4]

24.   Work out the angle marked x.

x = ... °

[2]

Please turn over …

25   In the subtraction sum on the right a, b and c are digits and a is less than b.

What is the value of c?

$$
\begin{array}{r}
b\ a \\
-\ a\ b \\
\hline
c\ 6
\end{array}
$$

………………….....

[2]

26   a, b and c are all positive.

We also know that:

$$a \times b = 2$$

$$b \times c = 24$$

$$c \times a = 3$$

What is the value of a + b + c?

………………….....

[2]

END