Practice for Mathematics Entrance Test

This is a sample of the topics your child will meet on the test.

This is longer than the test which consists of 27 questions.

It is not expected that all children should be able to answer all questions

Please feel free to contact the Mathematics department should you seek further guidance

1.

Complete the following

(a) 73 + ………… = 100

....
(1 mark)

(b) 100 – ………… = 65

....
(1 mark)

(c) 100 × ………… = 240

....
(1 mark)

2.

Write in figures

(a) twelve thousand and twenty nine

……………………………………………………………………………….
(1 mark)

(b) three thousand and eight.

………………………………………………………………………….
(1 mark)

(c) two million and eighty eight thousand and three

………………………………………………………………………….
(1 mark)

3.
   (a) Write the number 8207 in words.

        Answer ....   *(1 mark)*

   (b) In the number 8207, write down the value of the figure 2

                    Answer ....   *(1 mark)*

   (c) Write the number 8207 to the nearest hundred.

                    Answer ....   *(1 mark)*

   (d) Write the number seven thousand and six in figures.

                    Answer ....   *(1 mark)*

4.
   (a) Write down all the factors of 22

        ....

        ....

                    Answer ....   *(2 marks)*

   (b) Write down a square number between 20 and 30

        ....

                    Answer ....   *(1 mark)*

5.

Find the result to the following

(a) Multiply 456 by 7

Answer…………………………….

(1 mark)

(b) Subtract 58 from 235

Answer………………………………….

(1 mark)

(c) Add 73 to one third of 333

Answer………………………………….

(2 marks)

(d) What is the difference between 3087 and 689

Answer………………………………….

(1 mark)

6.

Fill in the spaces to make the following correct

(a) 25 x 1000 = ………….   (b) ………… ÷   10 = 350

(c) 0.2 x ………= 100   (3 marks)

7.
(a) £12288 is shared between 8 people. How much does each person get?

Answer………………………….
(1 mark)

(b) 7 people share £27272 between them. How much does each person receive?

Answer……………………………
(1 mark)

8.

Claire buys 40 bulbs.
25% are crocus bulbs, $\frac{1}{5}$ are tulip bulbs and the rest are daffodil bulbs.

How many daffodil bulbs does she buy?

....

....

....

Answer .... *(3 marks)*

9.

Andy's salary is £24 000 per year.
He is paid the same amount each month.
He is given a pay rise of 10%.

Calculate his new **monthly** salary.
You **must** show all your working.

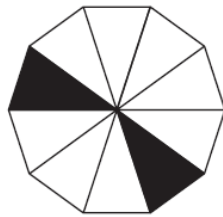...

....

....

....

Answer £ .... *(4 marks)*

10.

Complete this shopping bill.

4 oranges at 26p each	
$\frac{1}{2}$ kg of grapes at £3.20 per kg	
Total	£

(3 marks)

11.

(a) What fraction of the shape is shaded?

…………………………………………………………………………………..

Answer …………………….. (2 marks)

If each triangle represents 40 items

(b) How many items are there in total?

…………………………………………………………………………………

Answer………………………. (2 marks)

12.

A restaurant serves four types of vegetables.

Carrots (C)   Broccoli (B)   Peas (P)   Turnips (T)

(a)   The pictogram shows the number of portions of each vegetable served one lunchtime.

Key ( ) = 2 portions

Carrots (C)	◯ ◯ ◯ ◯ ◖
Broccoli (B)	◯ ◯ ◯
Peas (P)	◯ ◯ ◯ ◯ ◯ ◯
Turnips (T)	◯ ◯ ◖

(i)   Which vegetable was served the least?

Answer .... (1 mark)

(ii)   How many more portions of peas than carrots were served?

....

Answer .... (2 marks)

(iii)   How many portions of vegetables were served altogether?

....

Answer .... (2 marks)

(b)   Jason chooses two different types of vegetable with his meal.

List **all** the possible combinations that Jason could choose.

....

....

....

....

....

....

(2 marks)

13.

Here is a list of numbers

8   10   11   16   20   27   33

From this list, write down

(a) a multiple of 9

Answer ....   *(1 mark)*

(b) a factor of 30

Answer ....   *(1 mark)*

(c) a square number

Answer ....   *(1 mark)*

(d) a prime number.

Answer ....   *(1 mark)*

14.

The table shows the heights of four mountains in the Lake District.

Mountain	Helvellyn	Scafell Pike	Scafell	Skiddaw
Height (in feet)	3118	3210	3162	3053

(a) Put the heights in order, starting with the lowest.

....

Answer .... , ... , ... , ...   *(2 marks)*

(b) Find the difference in height between the highest and lowest mountains.

....

....

....
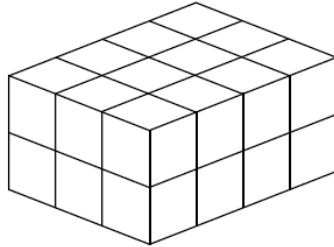
Answer .... feet   *(2 marks)*

15.

This cuboid is made from cubes of side one centimetre.

(a)   Find the volume of the cuboid.

    ....

                Answer .... cm^3 (2 marks)

(b)   Find the surface area of the cuboid

    ....

                Answer...cm^2 (3 marks)

16.

(a)   Write down the next two numbers in the following sequences.

(a)   (i)   60   54   48   42   36   ....

(a)   (ii)   1   2   4   8   16   ....   (4 marks)

(b)   Another sequence begins   1   3   7   15   31

    Explain the rule for continuing this sequence.

    Answer ....

    ....

    ....
                                                                                        (1 mark)

17.

The following number cards are placed in a bag.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
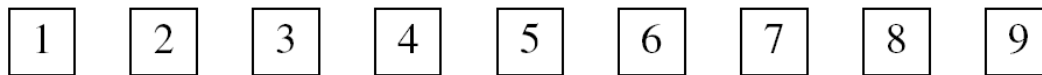
A card is taken out at random.

Find the probability that the number on the card is:

(a)   5

Answer ....   *(1 mark)*

(b)   an even number

Answer ....   *(1 mark)*

(c)   a number greater than 10

Answer ....   *(1 mark)*

18.

Lindsey buys five kilograms of potatoes at 56p per kilogram.

How much change does she get from £10?

....

....

....

Answer £ ....   *(2 marks)*

19.
(a)
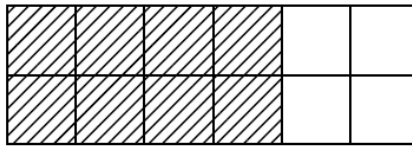
What fraction of the shape is shaded?
Give your answer in its simplest form.

....

Answer .... *(2 marks)*

If each square represents 20 people.

(b) Find the total number of people represented by the 12 squares.

....

Answer.. *(2 marks)*

20.
Mark is organising a trip for his running club.
He hires a coach which normally costs £400.
The coach firm gives a discount of 10% on this amount.
Mark shares the cost equally between the 30 members of the club.

How much does each member pay?
You **must** show your working.

....

....

....

....

....

Answer £ .... *(4 marks)*

21.

Dylan wants to buy this computer.

The price of £600 is reduced by $\frac{1}{3}$ in a sale.

He then pays $\frac{1}{4}$ of the sale price as a deposit.

£600

How much is the deposit?
You **must** show your working.

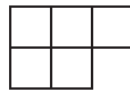..

....

....

....

Answer £ ....   (3 marks)

22.

A pattern is formed from squares.

Pattern 1   Pattern 2   Pattern 3   Pattern 4

(1 mark)

(a)   Draw Pattern 4 in the space above.

(b)   Find the number of squares in Pattern 6.

....

....

Answer ....   (1 mark)

23.
  (a)   Draw the lines of symmetry on these shapes.

(3 marks)

24.
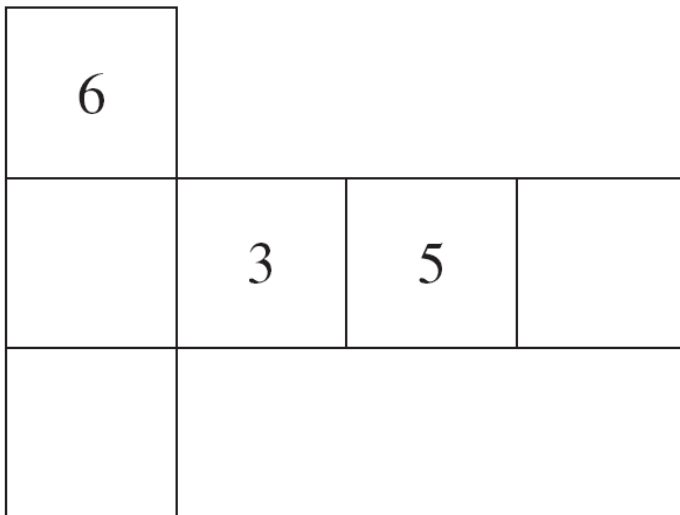
The diagram shows a net of a cube.
The cube has six faces numbered 1 to 6.
When the cube is made the numbers on the opposite faces of the cube add up to 7.

Fill in the missing numbers.

(2 marks)

25.

The time for cooking a turkey is given by the formula

cooking time in minutes = weight in kilograms × 40 + 25

(a) A turkey weighs 6 kilograms.

Find its cooking time.

....

Answer .... minutes   *(2 marks)*

(b) A turkey takes 165 minutes to cook.

Find its weight.

....

....

Answer .... kilograms   *(3 marks)*

26.

Kevin drove from Leeds to Luton.
The distance – time graph shows his journey.
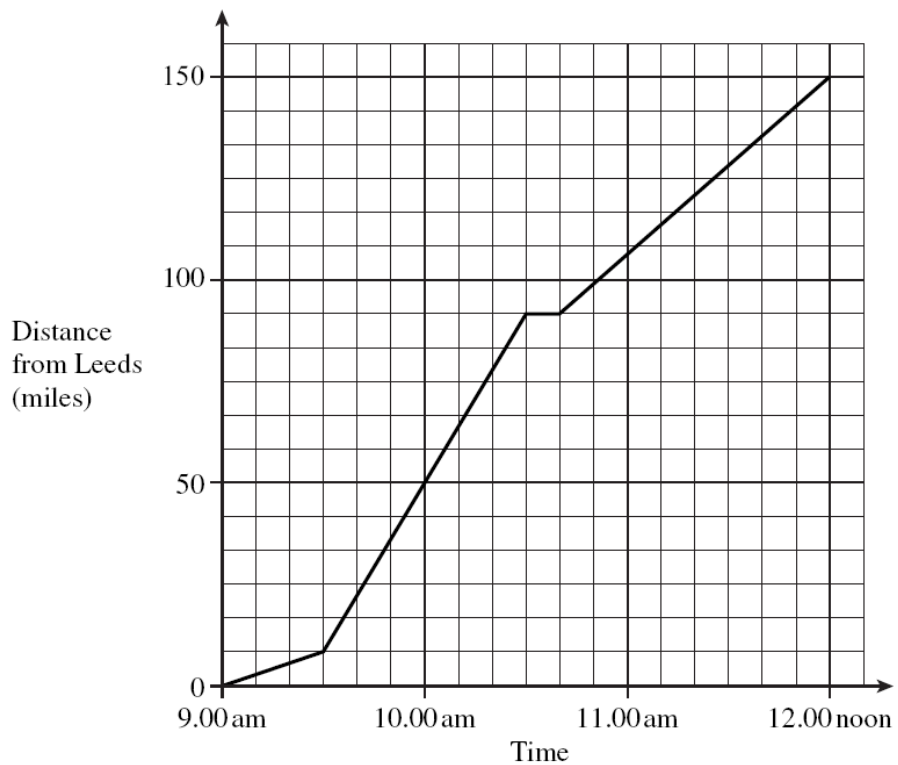
(a) How far is it from Leeds to Luton?

....

Answer .... miles   *(1 mark)*

(b) Kevin stopped at a service station for petrol.

How long did he stop for?

....

Answer .... minutes   *(1 mark)*

(c) How long did it take Kevin to travel from Leeds to London?

Answer ………………………………… hours   *(1 mark)*

27.

Here is a pattern of dots to show the triangle numbers.

```
                        ●
              ●       ●   ●
      ●     ●   ●   ●   ●   ●
```

1st triangle   2nd triangle   3rd triangle   4th triangle   5th triangle
  number   number   number   number   number
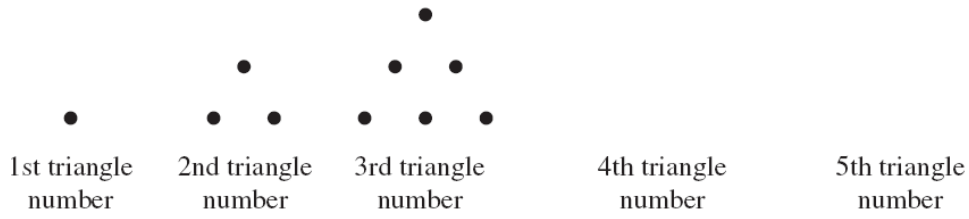
(a) Continue the pattern to show the 4th and 5th triangle numbers.

(2 marks)

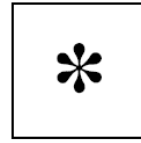(b) Complete the sequence of triangle numbers: 1, 3, 6, ………, ………

(1 mark)

(c) (i) Write down the 6th triangle number.

Answer .... *(1 mark)*

28.
Glyn has three cards with symbols on them.

$$? \qquad ! \qquad *$$

Each symbol stands for a different whole number.

Glyn knows that

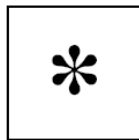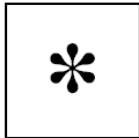$$? \quad + \quad ! \quad = 7$$

$$? \quad - \quad ! \quad = 3$$

$$! \quad \times \quad * \quad = 6$$

What number does each symbol stand for?

....

....

Answer $? =$ .... , $! =$ .... , $* =$ ....

(3 marks)

29.
The table shows the temperature at different times in Oslo on 1st January 2008.

Time	Temperature
Midnight	– 5° C
4 am	– 8° C
8 am	– 2° C
Midday	7° C
4 pm	3° C
8 pm	1° C

(a) Write down

(a) (i) the highest temperature,

Answer .... °C   (1 mark)

(a) (ii) the lowest temperature.

Answer .... °C   (1 mark)

(b) Work out the difference in the temperature between 4 am and 8 am.

....

Answer .... °C   (1 mark)

30.
The table shows how to work out powers of 4

$4^2 = 4 \times 4$	=	16
$4^3 = 4 \times 4 \times 4$	=	64
$4^4 = 4 \times 4 \times 4 \times 4$	=	256

(a) Write down the next line in the table.

....

....
                                                                                    (2 marks)

(b) What will be the units digit in 4^9?

....

....
                                                                                    (1 mark)

31.

The diagram shows the measurements of a rectangle.

2 cm [rectangle] Not drawn accurately

4 cm
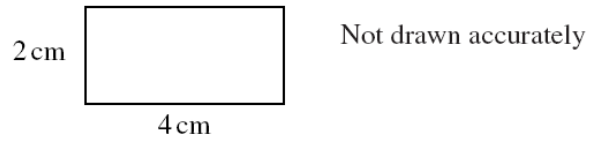
Four of the rectangles are arranged to form a larger rectangle.

[diagram of larger rectangle] Not drawn
accurately
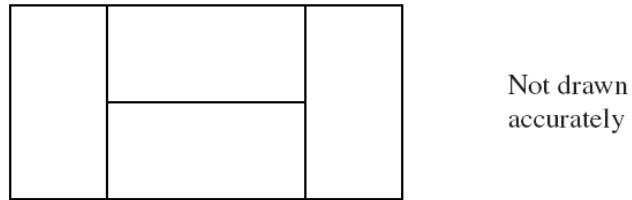
(a) Work out the perimeter of the larger rectangle.

....

....

Answer .... cm   (2 marks)

(b) Work out the area of the larger rectangle.

....

....

Answer .... cm^2 (2 marks)

32.

The diagram shows a weighing scale for measuring kilograms.
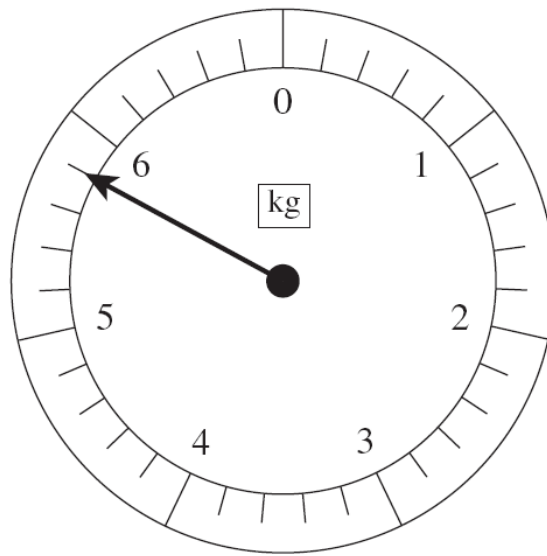
(a) What is the reading on the scale?

....

   Answer .... kg   *(1 mark)*

(b) Draw a line on the diagram to indicate a reading of 3.1 kg.

          (1 mark)

(c) Convert 3 kg to pounds.

....

....

   Answer .... pounds   *(2 marks)*

33.

Part of a train timetable is shown.

Liverpool	1618		1648	
Manchester	1725		1757	
Huddersfield	1812	1816	1842	1845
Ravensthorpe		1826		1853
Dewsbury	1822	1831	1852	1858

John travels from Manchester to Ravensthorpe.
He has to change trains in Huddersfield.

(a) (i) He arrives in Manchester at 1730 to catch the next train.

How long does he have to wait in Huddersfield for the train to Ravensthorpe?

....

....

Answer .... minutes   *(1 mark)*

(a) (ii) How long does his journey take from Manchester to Ravensthorpe?

....

....

Answer .... minutes   *(2 marks)*

(b) Sam also travels from Manchester to Ravensthorpe.
He arrives in Manchester ten minutes earlier than John.

How much earlier does Sam arrive in Ravensthorpe?

....

....

Answer .... minutes   *(1 mark)*

34.

The standard quadrilaterals are

Square   **Rectangle**   **Parallelogram**

Kite   **Rhombus**   **Trapezium**

(a)   Three different quadrilaterals have these two properties.

   Both pairs of opposite sides are equal.
   Rotational symmetry order 2

   Name the **three** quadrilaterals.

   Answer ....

   ....

   ....   *(2 marks)*

(b)   Two of the quadrilaterals in part (a) also have this property

   Diagonals do not cross at right angles.

   Name the **two** quadrilaterals.

   Answer ....

   ....   *(1 mark)*

(c)   For one of the quadrilaterals in part (b), write down an extra property that will distinguish it from the other.

   Quadrilateral chosen ....

   Property ....

   ....
            (1 mark)

35.
Here are some common metric units used to measure mass, length and volume.

litre (l) ,   millilitre (ml),   millimetre (mm),   centimetre (cm),   metre (m),
kilometre (km),   gram (g),   kilogram (kg)

Choose the appropriate unit for measuring the following things:

(a) the height of a tree

Answer…………………………..
(1 mark)

(b) the distance between Liverpool and Southport

Answer………………………….
(1 mark)

(c) the volume of water in a drinking bottle

Answer………………………….
(1 mark)

(d) the thickness of a coin

Answer………………………….
(1 mark)

(e) the weight of a man

Answer………………………….
(1 mark)