LeicesterHigh
SCHOOL
FOR GIRLS

# Entrance Examination Specimen

# Mathematics for Year 10 Entry

## Time: 1 hour

Answer as many questions as you can. Write your answers in the spaces provided and show all your working clearly.

**You must not use a calculator**.

**Name:**_____ **Age:** _____

**Present School:** _____

**Mark:**

1.a. Calculate 15% of £64

£ _____ (2)

b. Calculate ¾ of 84 kg

_____kg (2)

c. Calculate 0.65 x 0.3

_____ (1)

d. Express a test mark of 17 out of 20 as a percentage

_____ % (2)

e. Sam eats 12 sweets from a bag of 33 sweets. What fraction of the sweets remains? Give your fraction in its lowest terms.

_____ (2)

f. 80p is shared between Ben and Calum in the ratio 3:2. How much more does Ben receive than Calum?

_____ (3)

g. Diane covers 9 metres when she walks 12 paces. What distance will she cover when she walks 16 paces?

_____m (3)

h. Emma won the first prize of £120 in a Prize Draw. This was ¾ of the total prize money paid out. What was the total prize money?

£_____ (3)

2. a. Show how you would work out a rough estimate of the product 375 x 23, and give your estimated answer.

_____ (3)

b. Now work out the exact answer to

$$\begin{array}{r} 375 \\ \times\ 23 \\ \hline \end{array}$$

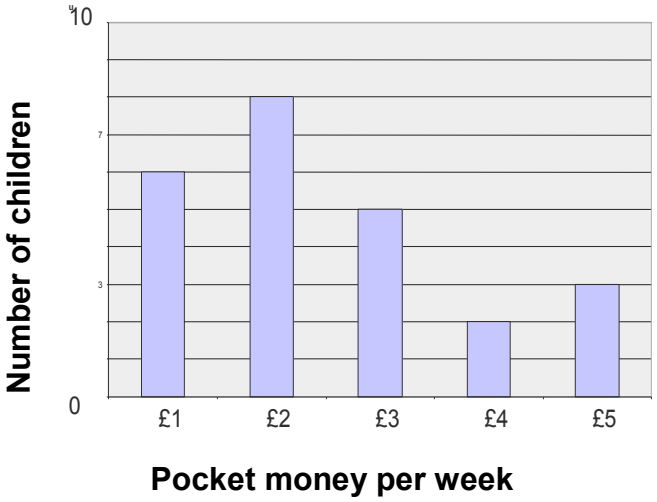
_____ (2)

c. Anne wrote down this calculation: $\frac{6000 \times 0.2}{30} = 400$

Her teacher looked at her answer and said it could not be correct.
Explain how the teacher knew the answer was wrong.

(2)

3.




a. The bar a chart shows the results of a survey on the amount of pocket money given to 24 children.

(i) What is the mode?

_____ (1)

(ii) How many children have at least £3 per week pocket money?

_____ (2)

(iii) Find out the total amount of money given to the children.

_____ (2)

b. A pie chart is drawn to show the same information. Calculate the angle of the sector which represents the children who have £1 per week pocket money.

_____ (2)

4. The temperatures at noon in Montreal on the seven days of one week were as follows:

| | |
|---|---|
| Sunday | -5° C |
| Monday | -4° C |
| Tuesday | -7° C |
| Wednesday | 1° C |
| Thursday | 5° C |
| Friday | 0° C |
| Saturday | -4° C |

a. Calculate the mean (average) of these temperatures.

_____ (3)

b. How many degrees did the temperature fall from noon on Thursday to noon on Saturday?

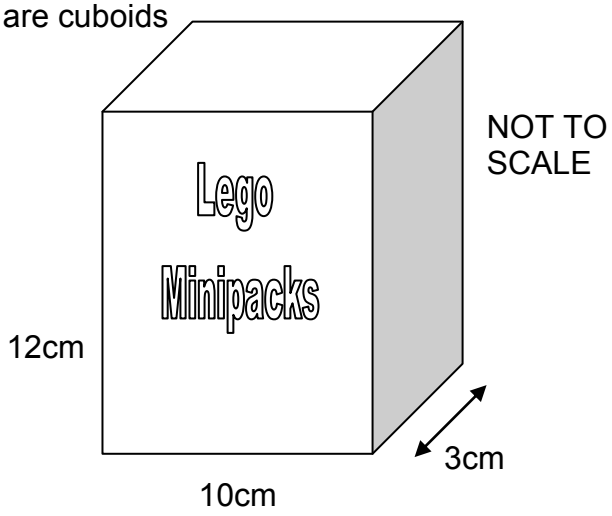
_____ (2)

c. If a day is chosen at random during that week what is the probability that the temperature at noon was above zero?

_____ (2)

5. Lego minipacks are sold in boxes which are cuboids measuring 10 cm by 3 cm by 12 cm.

a. Find the volume of a minipack box of lego.




NOT TO SCALE

_____ (2)

The boxes are packed into cartons which are cuboids measuring 60 cm by 30 cm by 12 cm.

b. Find the number of minipack boxes of lego which may be packed into a carton.

_____ (3)

6. Calculate

a. (i) $(1^3 + 2^3 + 3^3) – (1 + 2 + 3)^2$

_____ (2)

(ii) $(1^3 + 2^3 + 3^3 + 4^3) – (1 + 2 + 3 + 4)^2$

_____ (2)

b. Comment on the pattern in your results for part a.

_____ (1)

7. There were *x* people on a bus when it left Oadby. It then stopped only at Fleckney, Kibworth and Market Harborugh.

a. At Fleckney 7 people got on and nobody got off.
Write down in terms of *x*, an expression for the number of people on the bus between Fleckney and Kibworth.

_____ (1)

b. When the bus left Kibworth there were twice as many people on it as when it arrived there.

Write down, in terms of *x*, an expression for the number of people on the bus between Kibworth and Market Harborough.

_____ (1)

c. There were 36 people on the bus when it reached Market Harborough.

(i) Write down an equation in *x*.

_____ (1)

(ii) Solve the equation to find the number of people on the bus when it left Oadby.

_____ (2)

8. What is the area of the square whose perimeter is 24 cm?

_____ (3)

9. Solve these equations.

(i). 5a = 17.5

a = _____ (1)

(ii) b – 7 = 26

b =_____ (1)

(iii) 3p + 14 = 8

p =_____ (2)

(iv) 4q – 10 = q + 11

q =_____ (3)

(v) $\frac{m}{2}+\frac{m}{3}=10$

m =_____ (3)

10. (i). If w = u (v – t) find w when u = 5, v = 7 and t = 3.

w =_____ (3)

(ii) If w = u (v – t) find t when w = 48, u = 8 and v = 9.

t =_____ (3)

11. I think of a number and divide it by 3. The result is 2 less than the number I first thought of. Find the number I first thought of.

_____ (3)

12. Georgina has a packet to post. She cannot obtain stamps from the Post Office but she has a supply of 27p and 19p stamps. She wants to waste as little money as possible.
    Work out which stamps she should put on the packet if the post is:

    a. 34p

_____ (2)

    b. 72p

_____ (2)

13. In each of the following put a decimal point so that the measurement is reasonable.

    a. Diameter of a 2p coin 2 7 5 0 cm (1)

    b. Weight of an average woman 5 7 1 4 kg (1)

    c. Capacity of a plastic drinks bottle 1 6 2 1 Litres (1)

    d. Length of a football pitch 1 0 7 6 m (1)

14. A local Gym is open every day of the week. Adele, Beth and Chrissie visit the Gym together one Saturday. After that, Adele visits it every second day, Beth every third day and Chrissie every fifth day.

a. After how many days will all three girls be at the Gym together again?

_____ (3)

b. What day of the week will it be?

_____ (1)

15. Using any of +, - , x , ÷ or ( ) , more than once if needed, complete these statements to make them correct.

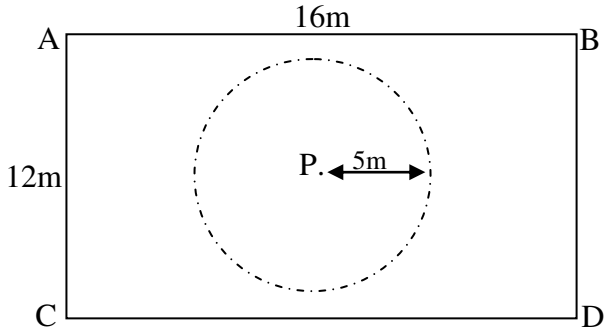
a. 2 3 5 7 = 41

(2)

b. 2 3 5 7 = 10

(2)

16. ABCD is a rectangular garden of length 16m and width 12cm, with a post P placed in the centre of the garden.




a. Calculate the distance of P from A

PA = _____m (3)

A goat is tied to the post P by a rope which is 5 metres long. The dotted line shows the boundary of the area which the goat can reach.

b. Calculate the length of this boundary. (Take $\pi = 3.14$)

_____ m (2)

c. Calculate the *area* of grass which the goat CANNOT reach.

Area = _____ m² (3)

End of examination