SEVENOAKS SCHOOL

YEAR 7 (11+) ENTRANCE EXAMINATION
January 2020
for entry in September 2020

MATHEMATICS

Name: _____

School: _____.

Time allowed: 1 hour

Equipment needed: Pen, pencil, eraser, ruler.

Information for candidates:
1. Calculators are NOT allowed.
2. Write your name and school on this sheet.
3. Write your answers on the question paper in the space provided.
4. There are 20 questions in this paper, try to answer all of them, but don't worry if you don't complete the paper. If you get stuck, just go on to the next question and if you have time at the end come back to the one(s) you left.
5. There are 60 marks in total available for this paper. Marks for each question are shown in square brackets [ ] after the question.
6. Show all your working. You may be awarded marks for correct working even if your final answer is incorrect, and a correct answer unsupported by correct working may not receive full marks.

1. Mark's reading group has read a total of 112 books so far. The group has 7 members including Mark.

    a) Each member has read the same number of books. How many books has each member read?

        Answer _____ [1]

    b) On average each member reads 150 pages during each group meeting. What are the total number of pages read by the group during each meeting?
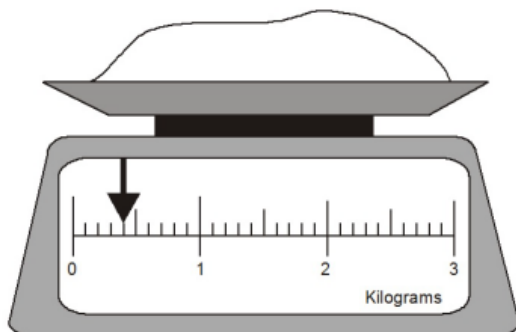
        Answer _____ [1]

2. a) Jill subtracts 18 from 33 and divides this by 5. What is the number Jill obtains?

        Answer _____ [1]

    b) Calculate: $3^2 \times (9 - 4) \div 3$

        Answer _____ [1]

3. Here is some flour on a weighing scale.

    a) How many **grams** of flour are on the weighing scale?

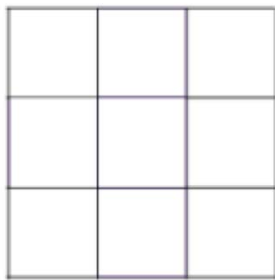   Answer _____ [1]

    c) How much more flour must be added to the scale to make 1.7 kg?
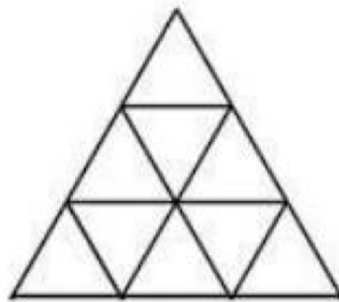
        Answer _____ [1]

4. In each of the shapes below, make a pattern by shading with **exactly** ….

    a) two lines of symmetry

    b) three lines of symmetry

                                                                                    [2]

5. a) Round 6.275 to 2 decimal places.

                                                        Answer _____ [1]

    b) Round 208, 567 to the nearest 100.

                                                        Answer _____ [1]

    c) Round 0.2499 to 3 decimal places.

                                                        Answer _____ [1]

6. The total cost of Helen's pencil case including stationery is £6.25.

    a) How much would 12 of these pencil cases cost?

                                                        Answer _____ [1]

    b) The ruler costs 75p. What percentage of the total cost of the pencil case is the ruler?

                                                        Answer _____ [2]

7. What is the smallest number which is **both** a multiple of 12 and 15?

Answer _____ [1]

8. Evaluate the following fractions giving your answer in its simplest form.
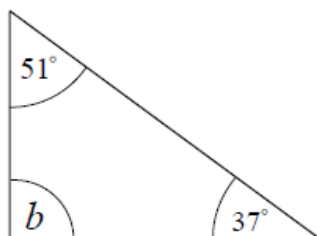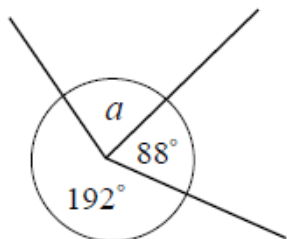   **Show clearly your working.**

   a) $\frac{2}{3} + \frac{4}{5}$

   Answer _____ [2]

   b) $3\frac{2}{5} - 1\frac{1}{2}$

   Answer _____ [2]

9. Calculate the angles in the diagrams below.

$a = $ _____ [2]

$b = $ _____ [1]

10. Below are the ingredients needed to make 16 gingerbread men. Sam wants to make 24 gingerbread men. Work out how much of each ingredient he needs.

Ingredients to make **16** gingerbread men
180 g flour
40 g ginger
110 g butter
30 g sugar

flour (g) _____

ginger (g) _____

butter (g) _____

sugar(g) _____

[3]

11. Calculate x in the following equations.

a) $17 - x = 3$

Answer _____ [1]

b) $3x = 72$

Answer _____ [1]

c) $\frac{5x}{4} = \frac{1}{2}$

Answer _____ [1]

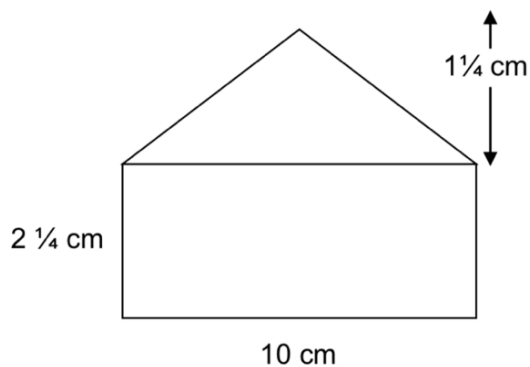12. What goes in the boxes to complete the calculations below?

a) $\frac{2}{5} \times \boxed{} = \frac{1}{3}$

Answer _____ [2]

b) $\boxed{} \div 1\frac{1}{3} = \frac{3}{5}$

Answer _____ [2]

13. Calculate the area of this compound shape.

1¼ cm

2 ¼ cm

10 cm

Answer _____ [3]

14. Fill in the missing numbers of the following sequences:

a) 3, 5, 7, __ , __ , 13, 15

[2]

b) -33, -6, 21, __ , __ , 102 , 129

[2]

c) 10, 11, 15, __ , __ , 65, 101

[2]

15. Below is a coordinate grid including a point A labelled below.
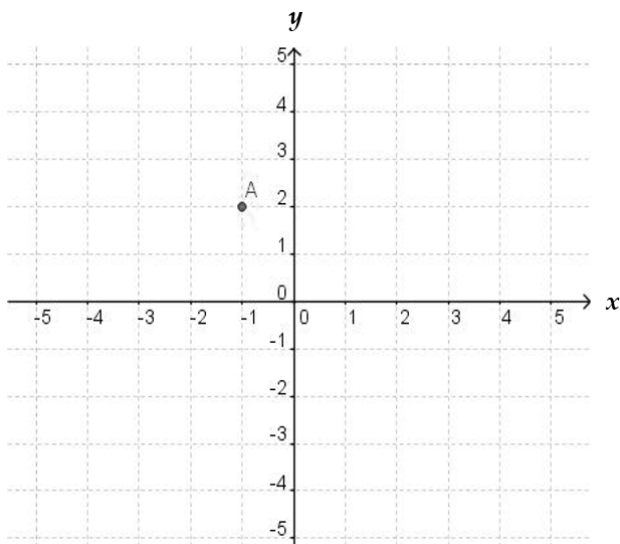
a) Give the coordinates of the point A.

Answer _____ [1]

b) Mark the coordinate (-4, 3) and label this point B.

[1]

c) The point C is obtained by reflecting the point A in the *x*-axis followed by a reflection in the *y*-axis. Give the coordinates of the point C.

Answer _____ [1]

16. One clock gains 5 minutes every hour and another clock loses 10 minutes every hour. After one week how many hours will the slow clock have lost to the fast clock.

Answer _____ [3]

17. a) The volume of the cuboid below is $64\ cm^3$. Calculate the value of the unknown length, x.


2 cm

4 cm

x cm
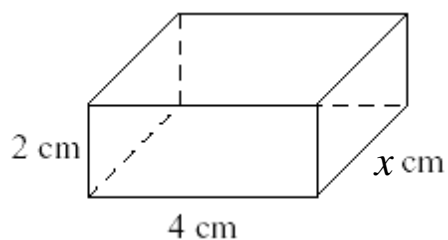
Answer _____ [2]

b) A cube has the same volume as the cuboid above. Calculate the surface area of the cube.

Answer _____ [3]

18. The diagram shows a design formed by drawing six lines in a regular hexagon. The lines divide each edge of the hexagon into three equal parts.
What **fraction** of the hexagon is shaded?

You must show relevant working to obtain marks.

Answer _____ [2]

https://metalrockseducation.co.uk/
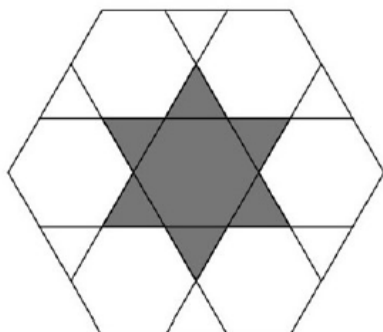
19. The standard Fibonacci sequence 1, 1, 2, 3, 5, 8, 13, ... begins with two 1s and each later number in the sequence is the sum of the previous two numbers. Other Fibonacci-like sequences can be constructed by starting with any two numbers a and b (not necessarily 1 and 1) and using the same rule for creating the other numbers in the sequence. What is the first term of the Fibonacci-like sequence whose second term is 4 and whose fifth term is 22? **You must show relevant working to obtain marks.**

Answer _____ [3]

20. A rectangle is made by placing together three smaller rectangles P, Q and R, without gaps or overlaps. Rectangle P measures 3 cm × 8 cm and rectangle Q measures 2 cm × 5 cm. Give all the possible measurements of R.

[3]