Warwick School

12+ Entrance Examination

Mathematics

Please write your full name here:

_____

Before you start read these instructions:

➢ This test lasts 45 minutes.

➢ The marks for each part of each question are given in brackets.

➢ We would like to see how you worked out your answers, so show your working. We may be able to give you marks even if the answer is wrong.

➢ If you get stuck, do not worry. Do not spend lots of time on it, just go on to the next question. You may have time at the end to try the question again.

➢ Do **not** use a calculator.

Remember to show your working

1. Write the number that is 'one hundred and sixty three below two thousand' in figures: [1]

....

2. Write in words the number: 52 189 681

.... [1]

3. Work out the following:

a)   60 x 700   .... [1]

b)   1500 x 8000   .... [2]

c)   49700 ÷ 700   .... [2]

d)   3 + 4 x 5   .... [1]

4. a)   List all the factors of 36.   .... [2]

b)   Find the highest common factor of 36 and 90 [2]

....

....

5. List all the multiples of 6 between 80 and 90.   [2]

....

6. 764 members of Bath Rugby's supporters club want to go to an away match. How many 60 seat coaches are needed to transport them? [3]

....

....

....

7. If £5992 is to be divided equally between 7 people, how much should each receive? [2]

....

....

8.   What is the cost of buying 13 books each costing £7.99?   [2]

        ....

        ....

9.   £180 is to be divided in the ratio 3:4:5 between Alan, Bob and Charlie; what is
        Charlie's share?   [3]

        ....

        ....

10.   The value of a car bought for £21000 decreased by 30% in one year. What was
        the value of the car after a year?   [3]

        ....

        ....

11.   An investor finds that his shares that were worth £6500 have increased in value by
        15%; what is their new value?   [3]

        ....

        ....

12.   I buy 5 bottles of drink, each costing £1.45 and 4 cakes, each costing 63p.

        a)   What is the total cost?   [3]

                ....

                ....

        b)   How much change do I receive from a £20 note?   [1]

                ....

13.   I cycle 4 ½ kilometres in 15 minutes. What is my average speed in kilometres per
        hour?   [2]

        ....

        ....

14. A tap drips water into a basin at the rate of 20 cm^3 per minute. The volume of the basin is 5 litres.

   a) How long in minutes does it take for the basin to fill up?
   [1 litre = 1000 cm^3] [2]

   ....

   ....

   b) What is this in hours and minutes? [1]

   ....

   ....

15. A piece of wood 6 metres long is to be cut up into pieces 45 centimetres long.

   a) How many pieces can be obtained? [3]

   ....

   ....

   b) How much wood is left over? [1]

   ....

16. Look at this list of numbers:

   8, 9, 10, 11, 12, 13, 14, 15

   Write down a number from the list that is

   a) a square number, ... [1]

   b) a cubic number, ... [1]

   c) a prime number. .... [1]

17. A train leaves Warwick station at 15:27 and arrives at London at 17:45. How long did the journey take? [2]

   ....

   ....

18. Simplify $\dfrac{16}{24}$ …………………………………………………………………………… [1]

19. Find $\dfrac{5}{8}$ of 560 kg. …………………………………………………………………… [2]

20. Convert 64% to a fraction written in its simplest form. [2]

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……………………………………………………………………………………………………

21. Convert the following into decimal form:

a) 35% …………………………………………………………………………… [1]

b) $\dfrac{7}{20}$ …………………………………………………………………………… [1]

c) $\dfrac{38}{1000}$ …………………………………………………………………………… [1]

22. Glasgow is directly North West of Leeds. If a pilot flies directly from Leeds to
     Glasgow, what bearing must he fly on? (Assume wind does not affect the plane.) [2]

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23. Solve the following equations:

a) $5a - 2 = 28$ ……………………………………………………… [2]

………………………………………………………

………………………………………………………

b) $\dfrac{b}{3} + 4 = 8$ ……………………………………………………… [2]

………………………………………………………

………………………………………………………

c) $4(3d+1)=3(2d+3)$ .... [3]

....

....

....

d) $\dfrac{2e+5}{3}=6$ .... [3]

....

....

....

24. a) Write 453.71843 correct to 2 decimal places. [1]

....

b) If $x = 45.3$ correct to 1 decimal place, what is the smallest possible value of x? [1]

....

25. Write down the next two numbers in the following number patterns.

a) 5, 8, 12, 17, 23, …….. , ……. [1]

b) 243, 162, 108, 72, 48, …….. , …….. [1]

c) 1, 3, 6, 10, 15, ……. , ……… [1]

26. Find:

a) $(-3)-(-11)$ .... [1]

b) $(-5)\times 7$ .... [1]

c) $\dfrac{(-2)\times(-12)}{-3}$ .... [2]

27.   Here are some matchstick patterns.

Length 1   **Length 2**   **Length 3**
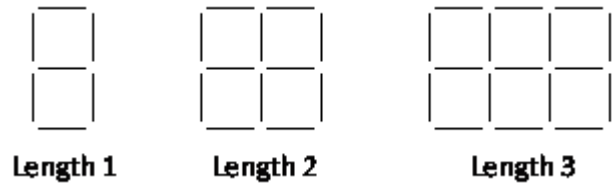
a)   How many matchsticks are there in a pattern of length 4?

[1]

………………………………………………………………………………………

b)   How many matchsticks are there in a pattern of length 10?

[2]

………………………………………………………………………………………

………………………………………………………………………………………

c)   Write down a formula for the number of matchsticks, m, in a pattern of length l.

[2]

………………………………………………………………………………………

………………………………………………………………………………………

28.   Draw and label x and y axes each ranging from -4 to 6 on the grid below.

a)   Plot the points (3,-2), (5, -2) and (5,4), and join them up to make a triangle. Label the triangle T.

[2]

b)   Plot the points (-4,-4) and (6,6), join them and label this line L.

c)   Draw the reflection of triangle T in the line L.

[1]

[2]

29.　　a)　　What is the area of the rectangle?　　　　　　　　　　　　　　　　[1]
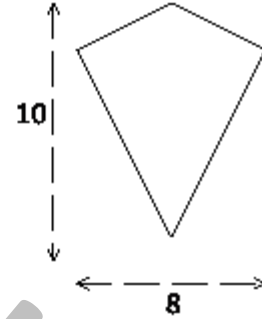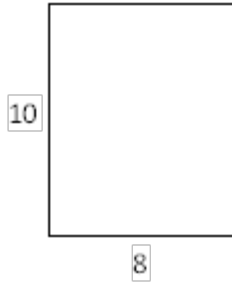
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　　b)　　What is the area of the kite?

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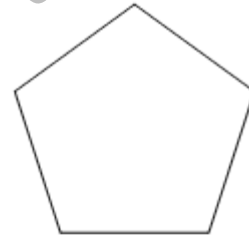　　　　……………………………………………………………………………………………………

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30.　　Name the following shapes, draw in any lines of symmetry and describe any rotational symmetry the shapes have.

　　　Name　　…………………………… …………………………

　　　　　　　　　　　　　　　　　　　　　　　　　[1]

　　　Rotational Symmetry　…………………………………

　　　　　　　　　　　　　　　　　　　　　　　　　[1]

　　　　　　…………………………………………

　　　　　　…………………………………………

　　　Name　　……………………………………………………

　　　Rotational Symmetry　…………………………………

　　　　　　　　　　　　　　　　　　　　　　　　　[1]

　　　　　　…………………………………………

　　　　　　　　　　　　　　　　　　　　　　　　　[1]

　　　　　　…………………………………………

　　　Name　　……………………………………………………

　　　Rotational Symmetry　…………………………………

　　　　　　…………………………………………　　　　[1]

　　　　　　…………………………………………　　　　[1]

31.   Calculate:

a) $1\frac{2}{3} + 3\frac{1}{2}$ ……………………………………………………………………   [3]

……………………………………………………………

……………………………………………………………

b) $1\frac{1}{2} \div 2\frac{1}{4}$ ……………………………………………………………   [3]

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……………………………………………………………

END OF EXAMINATION
Now go back and check your answers, and
try any questions you may have left out.