2007/4th A

Your name:

OUNDLE SCHOOL

Examination for Entrance to the Fourth Form   **Section A**
MATHEMATICS   **30 minutes**

Write ALL of your working on this paper. No other paper may be used. The answers alone are of no use. Show enough working on each question to show how you are getting your answer.

**You are NOT allowed to use a calculator for this Section.**   **NO CALCULATORS**

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1. Work out 256×1.2 .

    Answer ....

2. Divide 30247 by 7

    Answer ....

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3. Work out $1\dfrac{1}{8} \div \dfrac{5}{7}$

    Answer ....

4. Work out $\dfrac{4}{5} - \dfrac{3}{12}$

    Answer ....

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5. If $a = 2 \times 10^5$ and $b = 6.2 \times 10^6$, find in standard form:

    i) $a + b$ Answer ....

    ii) $a \times b$ Answer ....

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6. A car was bought for £2800. If its value after two years increases by 15%, what is it worth then?

    Answer ....

7. Simplify: a) $3x^3 + 4x^3$

Answer ....

b) $7x^4 y \times 5xy^3$

Answer ....

c) $20y^4 \div 5y^2$

Answer ....

d) $4(3x + 2y) - 2(5x - y)$

Answer ....

e) $\dfrac{24xyz}{8xz^2}$

Answer ....

8. Factorise: a) $12x^2y - 6xy$

Answer ....

b) $3x^2 yz + 6xy^3$

Answer ....

9. The general equation of a straight line is $y = mx + c$, where m is the gradient and c is the y-intercept. Find the gradient and y-intercept of the line $2y - 4x = 8$

Gradient ....

y-intercept ....

Sketch the graph of $2y - 4x = 8$
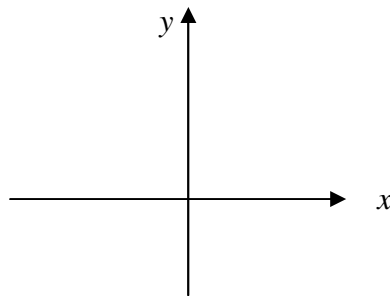
10. Find the formulae for nth term in each of these sequences.

a) 5, 9, 13, 17,

Answer ....

b) 21, 14, 7, 0,

Answer ....

11.   Divide £936 in the ratio 2:3:4

Answer ....

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12.   Which whole number is closest to a square root of 83.

Answer................................

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13.   Solve: a) $2x - 7 = x + 3$

Answer................................

      b) $2x - \dfrac{x}{2} = 12$

Answer................................

      c) $4(x-1) = 2(x+4)$

Answer................................

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14.   Solve the simultaneous equations.

$$2x + 3y = 2$$
$$3x - 4y = 20$$

$x =$ .... $y =$ ....

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15.   A model car travels 1.5 km in 18 minutes.
      How long would it take to travel 1 km?

Answer..................................

      How many metres would it travel in 45 minutes?

Answer ....

16.   A rectangle has an area of 48 cm^2. The length of one side is 12 cm. Find the perimeter of this rectangle

Answer ....

END OF SECTION A

2007 / 4th B

Your name:

OUNDLE SCHOOL

Examination for Entrance to the Fourth Form   **Section B**
MATHEMATICS   **30 minutes**

Write ALL of your working on this paper. No other paper may be used. The answers alone are of no use. Show enough working on each question to show how you are getting your answer.
CALCULATORS SHOULD BE USED FOR THIS SECTION.

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1.   Use your calculator to work out to 3 significant figures

$$\left(\frac{1.63}{1.7-0.911}\right)^2$$

Answer ....

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2.   Find $\frac{5}{9}$ of 76 kg to the nearest kg.

Answer ....

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3.   What is a speed of 45 km/h in m/s?

Answer ....

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4.   a)   Find the mean (average) of the numbers 8, 0, 3, 3, 1, 7, 4, 1, 4, 4.

Answer ....

b)   What is the mode for this set of numbers?   Answer ....

c)   The mean of eight numbers is 6. If two more numbers, each of value *x*, are included, the mean is 5. What is the value of *x*?
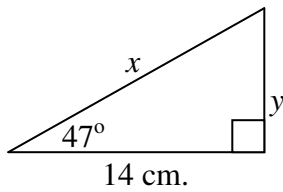
Answer ....

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5.   If Nick got 47 out of 85 on a test, work out what this is as a percentage to the nearest whole number.

Answer ....

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6.   A garage bill came to £27.60 including 15% VAT. How much was the bill before VAT was added?

Answer ....

7.

In the triangle shown, calculate the lengths x and y, giving your answer correct to 1 decimal place.

x

y

47°

14 cm.

$x =$ .... $y =$ ....

8.

12 cm

5 cm.

z
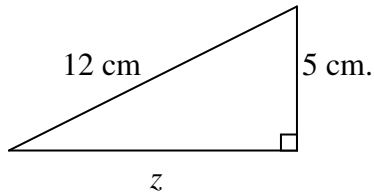
In the triangle shown, use Pythagoras' Theorem to calculate the length z.

Answer ....

9. If $a = 12$ and $b = -4$, find the value of

i) $6a + 3b$

i) Answer ....

ii) $(a - b)^2$

ii) Answer ....

10. Remove the brackets and simplify:

i) $4(5x - 7)$

i) Answer ....

ii) $6 - 4(x - 5)$

ii) Answer ....

11. How many numbers between 1 and 200 are exactly divisible by both 4 and 7?

Answer ....

12.   4 men take 3 hours to build a 12m wall. How long does it take 6 men?

Answer ....

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13.   A rectangular block of hot iron measuring 60 cm by 20 cm by 5 cm is rolled out in a rolling mill to a width of 1 metre and a thickness of 3 mm. To what length is it rolled? (Hint think about the units before you start).

Answer ....

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14.   The balls on a pool table are laid out and the triangle that holds them together is placed over them. Each pool ball has a diameter of 2 cm.
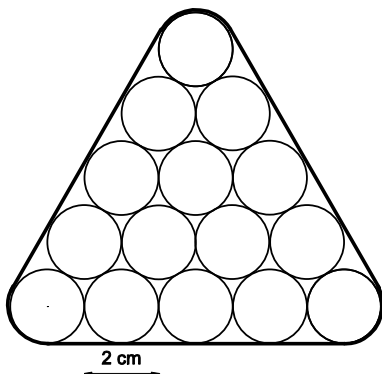
a) Find the perimeter of the triangle holding the balls together.

b) Find the area of the triangle holding the balls together.

2 cm

Perimeter …………………

Area   …………………….

END OF EXAMINATION