2009/4th 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 $24 \cdot 2 + 75 - 11 \cdot 8$

   Answer ....

2. Work out 538×2.3

   Answer ....

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3. Divide 3456 by 9

   Answer ....

4. Work out $1\frac{3}{5} - \frac{2}{7}$

   Answer ....

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5. If $a = 3.7 \times 10^4$ and $b = 4.6 \times 10^3$, find in standard form:

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

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

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6. The price of a TV before a sale is £685. A 15% discount is applied during a sale. What is the sale price of the TV?

   Answer ....

7. Simplify: a)   6pq+14qp

                                                    Answer ....

        b) $4pq^2 \times 2p^2q$

                                                    Answer ....

        c) $18z^3 \div 9z^2$

                                                    Answer ....

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

                                                    Answer ....

8. Factorise: a) $12pq-16p^2$

                                                    Answer ....

        b) $x^2 - 11x - 12$

                                                    Answer ....

9. A car travelled at 108 km/h for 20 minutes and then 51 km/h for 40 minutes. What was the average speed of the car over the whole journey?

                                                    Answer ....

10. Continue the patterns, giving the next two numbers each time:

    a)   16, 19.5, 23, 26.5 , ... , ...

    b)   1, 1, 2, 3, 5, 8, 13, ... , ...

    c)   1, 3, 6, 10, 15, ... , ...

    d)   2.5, 1.25, 0.625, ... , ...

11. Fill in the missing numbers:

                    0.43 × ....   =   4300

                    100 ÷ ....   =   9 000

12. On a clock face, what is the angle between the hands at 11.15?

                                                    Answer ....

13. Solve: a) $2(x-1) = 3x - (3-4x)$

Answer ....

   b) $\dfrac{3(2x-2)}{5} + 2x = x + 1$

Answer ....

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14. Peter buys 3 pens and 2 pencils for £1.55. He then notices that if he had bought 2 pens and 3 pencils he would have spent £1.45.
Work out the cost of each item

Pen   ....

Pencil ....

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15. A model car travels 1.1 km in 44 minutes.   How long would it take to travel 1 km?

Answer ....

How many **metres** does it travel in 1 minute?

Answer ....

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16. The formula for the volume of a sphere with radius r cm is $= \frac{4}{3}\pi r^3$

Taking π to be $\frac{22}{7}$ find the volume of a sphere with radius 7cm.
Leave your answer as a fraction in its lowest terms.

Answer ....

END OF SECTION A

2009/4th 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 $\dfrac{142.856 - 13.82^2}{\sqrt{1.85 - 2.43^3}}$ giving your answer to 1 decimal place

Answer ....

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2.   Find $\dfrac{2}{5}$ of 49 metres giving your answer to the nearest m.

Answer ....

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3.   7 boxes of bananas weigh 110 kg. Find the weight of 46 boxes.

Answer ....

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4.   a)   Find the mean (average) of the numbers 3.2, 2.8, 3.1, 5.6, 3.5

Answer ....

b)   Five people win an average of £230 in a special lottery competition. When it is revealed that a 6th person has won some money, the average winnings changes to £260. How much did the 6th person win?
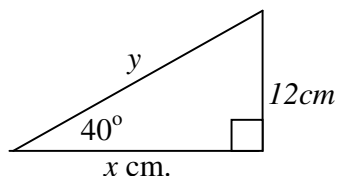
Answer ....

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5.   If Sharon scored 45 out of 92 in her Latin test. What percentage did she score giving your answer to the nearest whole number?

Answer ....

6.   After a 12% decrease, the value of a car is £7480. Find its value before
      the decrease.

Answer ....

7.   In the triangle shown, calculate the lengths x and y.

y

$12cm$

40°

x cm.

$x =$ .... $y =$ ....
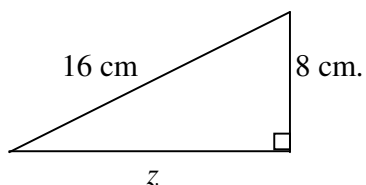
8.   In the triangle shown, use Pythagoras' Theorem to
      calculate the length z.

16 cm   8 cm.

z

Answer ....

9.   If $a = 3$ and $b = -2$, find the value of

      i) $(3a + b)^2$ i) Answer ....

      ii) $\dfrac{(2a - b)^2}{b}$ ii) Answer ....

10.   Remove the brackets and simplify:

      i) $3 (x - 5)$ i) Answer ....

      ii) $6 - (y - 2)$ ii) Answer ....

11.	A box contains two blue and 5 green cards. One card is chosen at random, replaced, and then another is chosen. What is the probability that:

a) both cards are blue;

a) ....

b) the cards are different colours;

b) ....

c) there is at least one blue bead.

c) ....

12.	Solve for x:	i)	$x^2 - 3x = 0$

i) Answer ....

ii)	$x^2 - 7x - 8 = 0$

ii) Answer ....

13.

(i) The diagram shows a block made up of 27 cubes. The outside faces are all painted. How many of the cubes have

a) exactly one painted face?

b) exactly two painted faces?

c) exactly three painted faces?

d) no painted faces?

Answers:

(ii) In instead of having 3 cubes in each row there were 4 in each row what would your answers to (a), (b), (c) and (d) be now?

END OF EXAMINATION