2008/4th A

Your name:

OUNDLE SCHOOL

Examination for Entrance to the Fourth Form
MATHEMATICS

Section A
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 $23{\cdot}5 + 85 - 9{\cdot}8$

Answer ....

2.   Work out $234 \times 1{\cdot}7$

Answer ....

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3.   Divide 50607 by 9

Answer ....

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

Answer ....

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5.   If $a = 2{\cdot}5 \times 10^5$ and $b = 6{\cdot}0 \times 10^4$, find in standard form:

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

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

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6.   A house was bought last year for £270 000. If its value has decreased over the year by 15%, what is it worth now?

Answer ....

7. Simplify: a) $5x^2 + 8x^2$

Answer ....

   b) $3xy^2 \times 2x^2$

Answer ....

   c) $20y^3 \div 4y^2$

Answer ....

   d) $3(7x + 5y) - 3(3x - 2y)$

Answer ....

8. Factorise: a) $4xy - 8x^2$

Answer ....

   b) $x^2 - 7x - 8$

Answer ....

9. A car travelled at 90 km/h for 20 minutes and then 60km/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)   17, 14·5, 12, 9·5 , ... , ...

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

   c)   1, 4, 9, 16, 25, ... , ...

   d)   1·5, 0·75, 0·375, ... , ...

11. Fill in the missing numbers:

$0.58 \times$ .... $=$ 580 000

$10 \div$ .... $=$ 7 000

12. On a clock face, what is the angle between the hands at 11.30?

Answer ....

13. Solve: a) $3x - 6 = 13 - 2x$

Answer ....

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

Answer ....

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14. Peter buys 3 packets of crisps and 2 cans of orange for £2·50. He then notices that if he had bought 2 packets of crisps and 3 cans of orange he would have spent £2·75.
Work out the cost of each item

Packet of crisps ....

Can of orange ....

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15. A model car travels 1.8 km in 27 minutes. How long would it take to travel 1 km?

Answer ....

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

Answer ....

16.
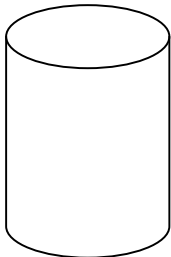
The diagram shows a can of radius 3 cm and a height of 14cms.
The volume (V) of a can is given by the formula

$V = \pi r^2 h$ where r is the radius and h is the height.

Taking $\pi = \dfrac{22}{7}$, calculate the volume.

Answer ....

END OF SECTION A

2008/4th 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 $\dfrac{\sqrt{143\cdot2-2\cdot9^2}}{13\cdot6-5.72}$ giving your answer to 1 decimal place

Answer ....

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2.   Find $\dfrac{3}{7}$ of 80 kg giving your answer to the nearest kg.

Answer ....

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3.   4 boxes of oranges weigh 70 kg. Find the weight of 30 boxes.

Answer ....

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4.   a)   Find the mean (average) of the numbers 21, 27, 31, 20, 35

Answer ....

   b)   Five people have an average age of 23. When a sixth person joins the group, the average age changes to 26. How old is the sixth person?

Answer ....

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5.   If David scored 37 out of 85 in his French test. What percentage did he score giving your answer to the nearest whole number?
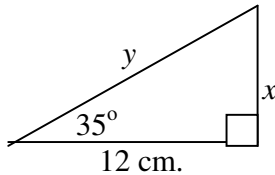
Answer ....

6. After a 15% increase, the value of a house is £161 000. Find its value before
    the increase.

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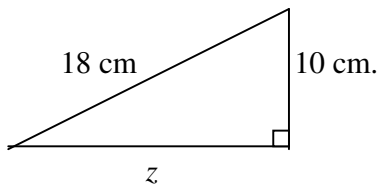
7.   In the triangle shown, calculate the lengths x and y.

    y
    x
    35°
    12 cm.

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

8.   In the triangle shown, use Pythagoras' Theorem to
    18 cm   10 cm.   calculate the length z.

    z

                                          Answer ....

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

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

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

10. Remove the brackets and simplify:

    i) $6(2x - 3)$ i) Answer ....

    ii) $14 - 3(2x + 4)$ ii) Answer ....

11. A box contains two red and three green beads. One is chosen at random, replaced, and then another is chosen. What is the probability that:

   a) both beads are red;

   a) ....

   b) the beads are different colours;

   b) ....

   c) there is at least one red bead.

   c) ....

12. Solve for x: i) $x^2 + 6x = 0$

   i) Answer ....

   ii) $x^2 - 5x + 6 = 0$

   ii) Answer ....

13. Look at the following patterns and then answer the questions.

1   2   3   4   5
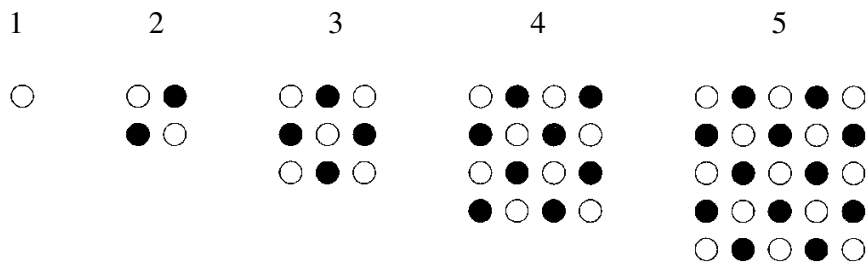
(a) How many balls in total will there be in pattern number 10?   (a)............................

(b) How many black balls will there be in pattern number 10?   (b)............................

(c) How many white balls will there be in pattern number 10?   (c)............................

(d) Write down the total number of balls in the nth pattern   (d)............................

(e) If n is odd, write down the number of black balls in the nth pattern

   (e)............................

END OF EXAMINATION