HAMPTON COURT HOUSE

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Surname:..... First name:.....

Entrance Examination
Year 7/8

MATHEMATICS

Please read this information before the examination starts.

- This examination is 45 minutes long.
- There are 75 marks in this test.
- Calculators are not allowed.
- Show all your workings clearly. Credit may be awarded for a logical method even if the final answer is incorrect.
- Answer as many questions as you can in the time available. Do not worry if you cannot complete all the questions, as curricula vary from school to school.

1. Write down the answers to these questions.
   You may show your working or work them out in your head.

   a. $124 + 37$

   Answer: ..... [1]

   b. 4×8

   Answer: ..... [1]

   c. $100 - 48$

   Answer: ..... [1]

   d. $39 \div (-3)$

   Answer: ..... [1]

   e. 502×10

   Answer: ..... [1]

   f. Half of 74

   Answer: ..... [1]

   g. $-263 + 984$

   Answer: ..... [1]

   h. $-705 - 342$

   Answer: ..... [1]

   i. $3 + 2 \times 5$

   Answer: ..... [1]

   j. 4.5×10

   Answer: ..... [1]

2. Work out 694×27, showing all your workings.

   Answer: ..... [2]

3. Here is a start of a number pattern:

28 25 22 19 16 13 10 …… ……

a. From the numbers in the list above, write down
   i. an even number

Answer: ..... [1]

   ii. the product of 2 and 11

Answer: ..... [1]

   iii. a prime number

Answer: ..... [1]

   iv. a square number

Answer: ..... [1]

b. Write down the next two numbers in the pattern.

Answer: .....and..... [2]

c. If you carry on the pattern, which will be the first number below zero?

Answer: ..... [1]

4. Jon keeps chickens and ducks. He has 6 chickens and 2 ducks.
   a. What fraction of Jon's animals are ducks?

Answer: ..... [1]

b. What percentage of Jon's animals are chickens?

Answer: .....% [1]

5. Express 102 as a product of its prime factors.

Answer: ..... [2]

6. What is the **smallest number** that has four different prime factors?

Answer: ..... [2]

7. Simplify the following: $3x + 7y - 6x + 23y$

Answer: ..... [2]

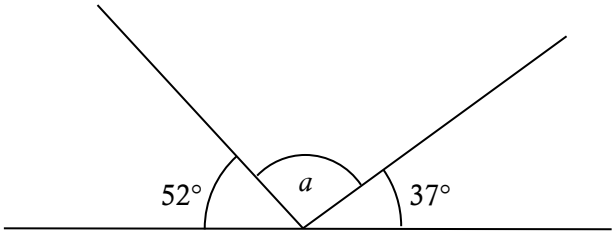
8. Solve these equations to find x:
   a. $x - 5 = 17$

Answer: ..... [1]

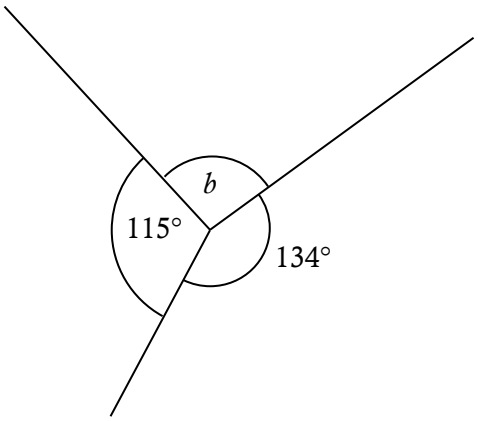
   b. $\frac{x}{2} + 3 = 12$

Answer: ..... [2]

9. Calculate the missing angles.



Answer: ..... [2]



Answer: ..... [2]

10. Here is a part of a railway timetable.

London King's Cross	10 30	11 30	12 35	13 25	14 30
Peterborough	11 24	12 35	13 27	14 15	15 45
Newcastle	13 36	14 58	15 39	17 05	17 30

a. How long, in minutes, does it take the 11 30 to get from London to Peterborough?

Answer: ..... [1]

b. Anja needs to be at a very important meeting in Newcastle at 15 00. Which train should she take from London? Give a reason.

Answer: .....

Reason: .....

..... [2]

11. There are two Maths classes in Year 6, one is called 6A and the other 6B.
The numbers of boys and girls in each class is shown in the table.

	boys	girls	total
6A	14		
6B		6	18
total			48

a. Complete the table. [3]

b. What fraction of the girls are in 6A?

Answer: ..... [1]

c. A pupil is chosen at random. What is the probability of picking someone from class 6B?

Answer: ..... [1]

d. A student is chosen from class 6B. What is the probability of picking a girl?

Answer: ..... [1]

e. Some girls join Year 6 from another school. Half of Year 6 are now boys. How many girls have joined the school?

Answer: ..... [1]

12. Jon looks at the Year 7 test results in Maths and lists the marks:

20, 5, 10, 12, 0, 1, 14, 2, 15, 14, 3, 5, 14, 4

a. What is the range?

Answer: ..... [1]

b. What is the median score?

Answer: ..... [2]

c. What is the mean score?

Answer: ..... [2]

d. What is the mode?

Answer: ..... [1]

e. Jon realises that the student with a score of 0, did in fact answer one question correctly and therefore got 1 mark.
Explain why this affects the mean score but not the median.

Answer: .....

.....

..... [2]

13. Write the following as top heavy fractions:

a. $3\frac{3}{5}$

Answer: ..... [1]

b. $2\frac{1}{3}$

Answer: ..... [1]

14. Solve the following, leaving your answers in the simplest form.

a. $\frac{1}{4}+\frac{3}{8}$

Answer: ..... [2]

b. $\frac{3}{7}-\frac{3}{4}$

Answer: ..... [2]

15. My cat drinks two thirds of a bottle of milk a day. How long will 6 bottles last?

Answer: ..... [2]

16. A lottery "jackpot" pay-out of €1 275 363 was shared amongst three people.
    a. How much did each receive?

Answer: € ..... [2]

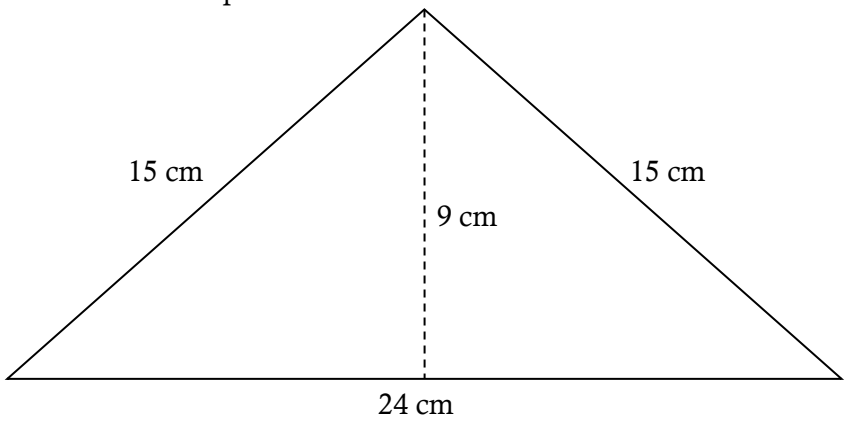
    b. How much did each receive, to the nearest thousand Euros?

Answer: € ..... [1]

    c. Round your answer to part a to 2 significant figures.

Answer: € ..... [1]

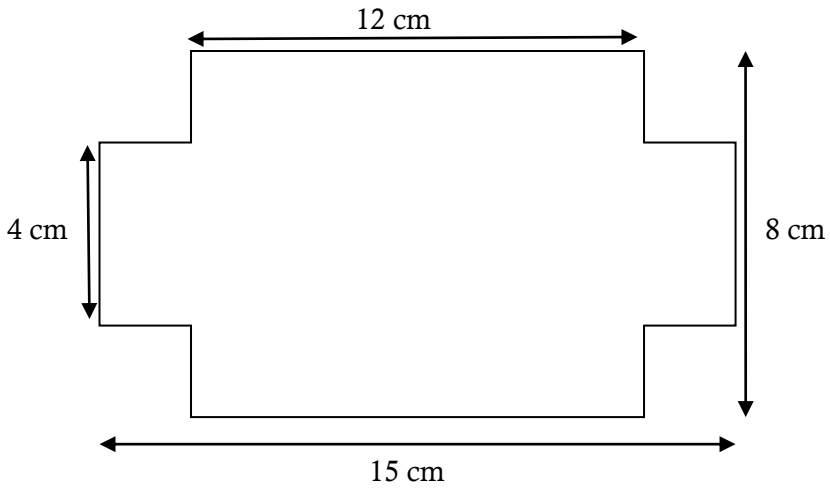
17. Find the area and perimeter



Perimeter: ..... cm [2]

Area: ..... cm^2 [2]

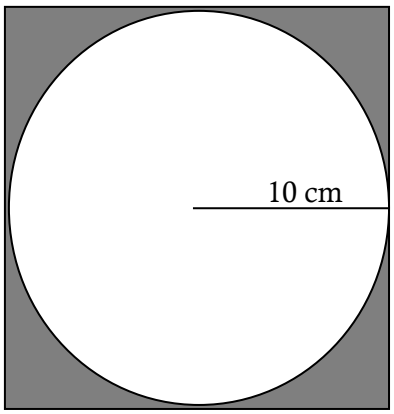
18. Find the area and perimeter



Perimeter: ..... cm [2]

Area: ..... cm^2 [2]

19. The formula for the area of a circle is $A = \pi r^2$. For the following task use $\pi = 3.14$.
A circle of radius 10 cm is inscribed inside a square as shown. Find the area of the shaded region.



Area: ..... cm^2 [3]

END OF EXAMINATION