MERCHANT TAYLORS' SCHOOL

11+ OFFICIAL PRACTICE PAPER

MATHEMATICS

Time Allowed: 60 minutes

Instructions:

Answer as many questions as possible. Some of them are easy at the start and become more difficult. You should show all your working on this question paper.

TURN OVER

1. Write down what the 4 stands for in 3427

Answer……*[1 mark]*

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2. (a) What is the eighth even number?

Answer……*[1 mark]*

(b) What is the fifth prime number?

Answer……*[1 mark]*

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3. What is the smallest number which can be divided by 3, 4, 5 and 6 exactly?

Answer……*[1 mark]*

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4. A child's heart beats 80 times per minute. How many times will it beat between 05:30 and 15:30 on the same day.

Answer……*[1 mark]*

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5. I think of a number and multiply it by 3 and then subtract 6. If the result is 15 what number was I thinking of?

Answer……*[1 mark]*

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6. Write down the next two terms in each of the sequences below

(a) 10, 13, 16, 19, 22, ..., ...

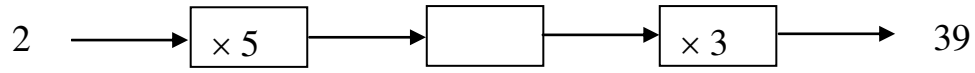
(b) 60, 59, 57, 54, 50, ..., ...

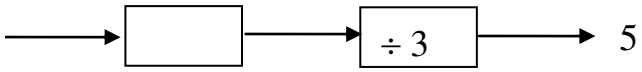
(c) 1, 2, 6, 24, 120, ..., ...

[3 marks]

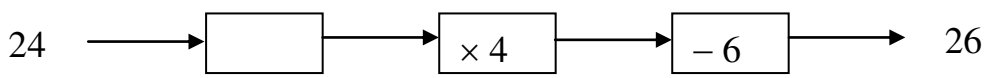
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7. Fill in the missing operations in the boxes

(a) 

(b) 

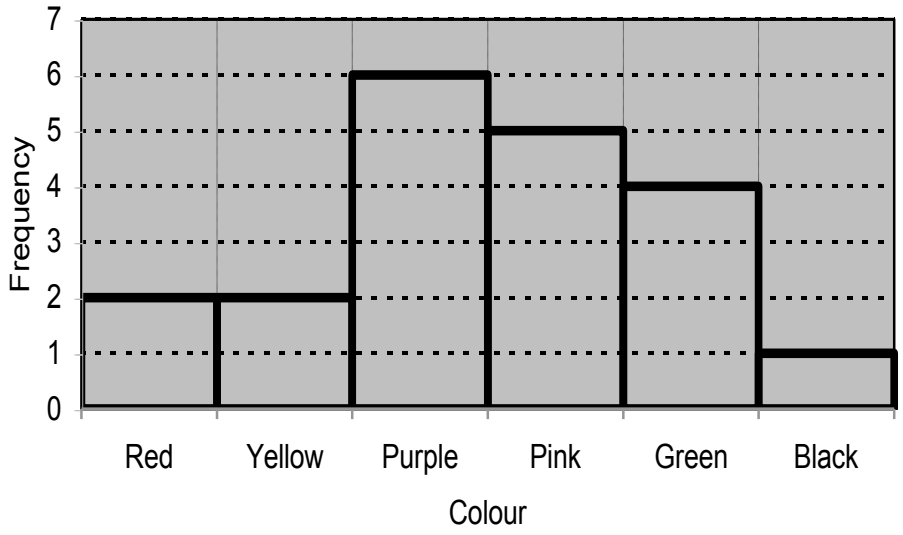
(c) Give <u>both</u> solutions:



Answer……and……*[4 marks]*

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8. Each pupil in a class were asked their favourite colour. The bar graph shows these results.



(a) What was the most common favourite colour?

Answer……*[1 mark]*

(b) How many pupils were in the class?

Answer……pupils *[1 mark]*

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9. The following table shows the runs that Michael scored in each of the 11 cricket matches he played for the school team.

Runs	0	25	15	40	52	15	6	8	25	35	10

(a) What was the mean number of runs he scored per innings?

Answer.....…runs per match *[2 marks]*

(b) What was the median number of runs scored?

Answer……runs *[2 marks]*

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10. If you roll an ordinary six sided die what is the probability of obtaining

(i)

(a) A six

Answer…….*[1 mark]*

(b) An even number

Answer……...*[1 mark]*

(ii)

(a) If I roll the die 60 times how many times would you expect to get a 2 or 3?

Answer……..…….*[1 mark]*

(b) If I roll a red die and a blue die together in how many different ways can I get a total of 7?

Answer…….*[1 mark]*

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11. Angela works for a computer firm. She is paid £10000, plus £100 for each computer she sells. How much will she earn if she sells

(a) 15 computers

Answer £ …….……*[1 mark]*

(b) How many computers does she sell if she earns £12,600 ?

Answer……computers *[1 mark]*

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12. Find:

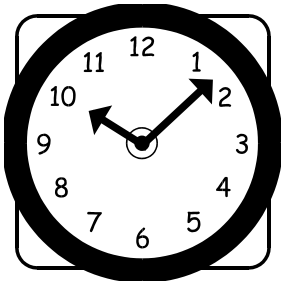
(a) 20% of £840

Answer £ ……*[1 mark]*

(b) $12\frac{1}{2}$% of 6.80 metres, giving your answer in ***centimetres***.

Answer…… **cm** *[1 mark]*

13.



Find the size of the angle, in degrees, turned by the ***minute*** hand of a clock as it moves from the

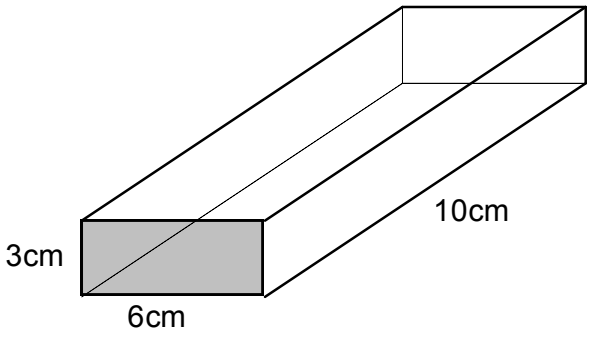
(a) 12 to the 1

Answer……*[1 mark]*

(b) 3 to the 7

Answer……*[1 mark]*

14.



The above diagram shows a solid box.

(a) What is the area of the shaded face?

Answer……..…cm^2 *[1 mark]*

(b) What is the total surface area of the box?

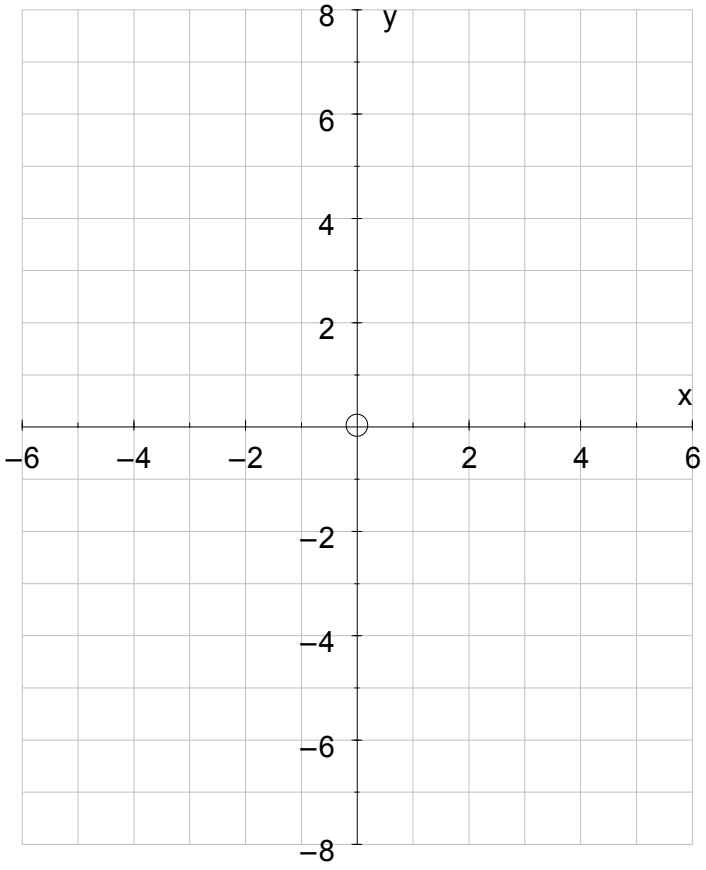
Answer……..…cm^2 *[2 marks]*

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15. Find $\frac{1}{3}$ of $2\frac{1}{4}$

Answer……*[1 mark]*

16.



(a) On the graph plot the following points (–2, 4) , (1 , 7) and (4 , 4)

[2 marks]

(b) Plot one further point so that the shape made by joining up the four points has 4 lines of symmetry and rotational symmetry order 4. Write down the co-ordinates of the point you have plotted.

Answer……*[1 mark]*

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17. There are 27 students in Mrs Din's class.
Mrs Din buys 4 boxes of chocolates.
There are 36 chocolates in each box.
She shares out the chocolates equally amongst her 27 students.

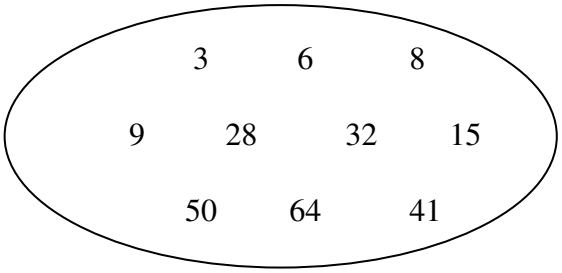
(a) Work out the number of chocolates each student receives.

Answer……*[1 mark]*

(b) Work out the number of chocolates left over.

Answer……*[1 mark]*

18.



From the numbers in the ring write down all the

(a) square numbers

Answer……*[1 mark]*

(b) cube numbers

Answer……*[1 mark]*

(c) prime numbers

Answer……*[1 mark]*

(d) factors of 56

Answer……*[1 mark]*

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19. Given that a = 2, b = –3 and c = 4, find the value of the following expressions:

(a) 5a + 2c

Answer……*[1 mark]*

(b) $\frac{1}{2}a^2 - b$

Answer……*[1 mark]*

(c) $\frac{3ac}{2b^3}$

Answer……*[1 mark]*

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20. The number of insects in a colony doubles each week. If there were 100 insects in the colony at the start of the first week,

(a) how many would there be after 6 weeks ?

Answer……insects *[1 mark]*

(b) After how many weeks would there first be more than 100 000 ?

Answer…….weeks *[2 marks]*

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21. What are the length and width of a rectangle:

(a) whose perimeter is 48 cm and whose width is one half of its length?

Answer length…….cm width .....cm *[2 marks]*

(b) whose area is 48 cm^2, perimeter is 32 cm and length is greater than width?

Answer length…….cm width .....cm *[2 marks]*

(c) whose area is 72 cm^2, and width is twice its length?

Answer length…….cm width .....cm *[2 marks]*

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22. Starting with the number **6** the operation ◇ **3** is applied followed by the Operation △ **1** to give a final answer of **1**, as in this example below:

6 ◇ 3 △ 1 = 1

Using the same operation for the diamond and triangle, find the missing numbers.

(a) **15 ◇ 3 △ 1 = ?**

Answer……*[1 mark]*

(b) **? ◇ 3 △ 1 = 8**

Answer……*[1 mark]*

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23. John came home from his vacation at his grandmother's with 5 books. While he was away he bought 2 books at the bookshop and got 1 book as a present from his grandmother. During his stay at his grandmother's, he also gave his cousin 4 books that he had finished. How many books did he take with him when he left for his holiday?

Answer…….books *[2 marks]*

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24. Here is a train timetable.

Place	Time of departure
Crewe	08:00
Wolverhampton	08:40
Birmingham	09:00
Coventry	09:30
Rugby	09:40
Milton Keynes	10:10
London	10:45

(a) How many minutes should it take the train to travel from Wolverhampton to Milton Keynes?

Answer……minutes *[1 mark]*

(b) If the train is 35 minutes late leaving Crewe, what time should it arrive in London?

Answer…….……*[1 mark]*

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25. List all the positive integers less than 20 that have TWO different factors, other than 1 and itself.

Answer…….…….……*[2 marks]*

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26. Mark has a market stall.
He sells apples at 56p for each kilogram.
Bianca buys 4 kilograms of apples.
She pays for her apples with a £5 note.



(a) How much change should she get?

Answer £ ……*[1 mark]*

Mark bought 25 melons for his stall.
He paid £16 for 25 melons.

(b) Work out the price Mark paid for each melon, in pence.

Answer…… p *[1 mark]*

Five of the melons were bad.
Mark sold the other 20 for 120p each.

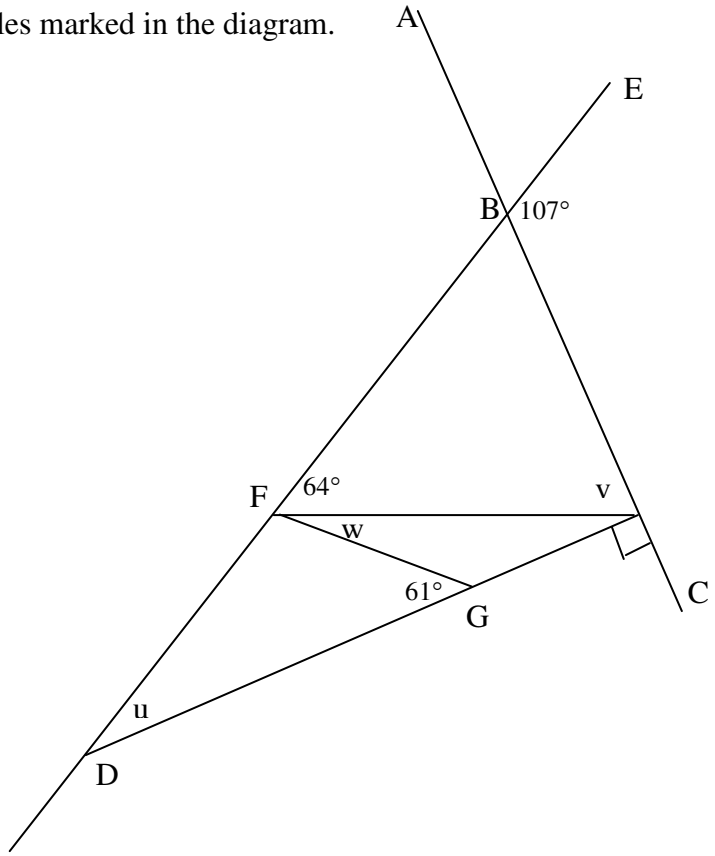
(c) Work out the total amount for which Mark sold the melons.

Answer £ ……*[1 mark]*

(d) Work out what profit Mark made in selling the melons, giving your answer as a fraction of the cost of buying the melons.

Answer……*[2 marks]*

27. Find the angles marked in the diagram.



u = ……..……° *[1 mark]*

v = ……..……° *[1 mark]*

w = ……..……° *[1 mark]*

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28. At noon the temperature is 3 degrees Celsius and it rises at a steady 1.5 degrees per hour throughout the afternoon.

(a) What will the temperature be at 1500 hrs

Answer……..……..…°*C [1 mark]*

From 1800 hrs the temperature begins to fall at a steady rate so that by midnight it is −3 degrees and continues to fall at this same rate through the rest of the night.

(b) What will the temperature be by 0400hrs?

Answer……..…°*C [2 marks]*

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29. Yesterday was one of those days. Not only did my watch break at 10.24 a.m. but when I shook it the watch started going backwards at the correct rate. What is the real time if my watch shows

(a) 10.10 a.m.

Answer……*[1 mark]*

(b) 9.43 a.m.

Answer……*[2 marks]*

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30. This mystery number has 4 digits.
Every digit is an odd number.
None of the digits is a 9.
Every digit in the number is different.
The smallest digit is in the thousands place.
The greatest digit is in the ones place.
This describes two possible numbers. The mystery number is the greater of those two numbers. What is the mystery number?

Answer……*[1 mark]*

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31. 2 packets of crisps and 2 drinks costs £1.50. 2 packets of crisps and 1 drink costs £1.10. What would it cost me if I buy 3 packets of crisps and 4 drinks?

Answer £ ……*[3 marks]*

END OF EXAMINATION

NOW CHECK ALL OF YOUR WORK CAREFULLY