



# Glenalmond College

let your story begin

## SCHOLARSHIP EXAMINATION

### MATHEMATICS

2019

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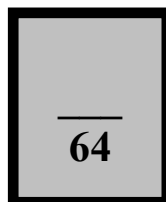
Time: 1 hour

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Name: .....

School: .....

**Non Calculator**



1. Using the information that

$$3.7 \times 12.9 = 47.73$$

write down the value of

(a)  $37 \times 1290$

.....  
(1)

(b)  $4773 \div 1.29$

.....  
(1)

(Total for Question 1 is 2 marks)

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2. (a) Work out  $\frac{2}{3} + \frac{4}{5} \times \frac{1}{2}$

.....  
(3)

(b) Work out  $423 \times 12$

You **must** show **all** your working.

.....  
(3)

(Total for Question 2 is 6 marks)

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3. A plane travels at a speed of 213 miles per hour.

(a) Work out an estimate for the number of seconds the plane takes to travel 1 mile.

..... seconds

**(3)**

**(Total for Question 3 is 3 marks)**

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4. Write 350 as a product of its prime factors.

.....

**(Total for Question 4 is 2 marks)**

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5. Solve the following equations.

a)  $5x - 3 = 32$

b)  $5(x - 2) + 2(x + 5) = -7$

c)  $\frac{x}{5} + \frac{x+3}{4} = 2$

(2)

(3)

(3)

(Total for Question 5 is 8 marks)

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6. It would take 120 minutes to fill a swimming pool using water from 5 taps.

(a) How many minutes will it take to fill the pool if only 3 of the taps are used?

..... minutes  
**(2)**

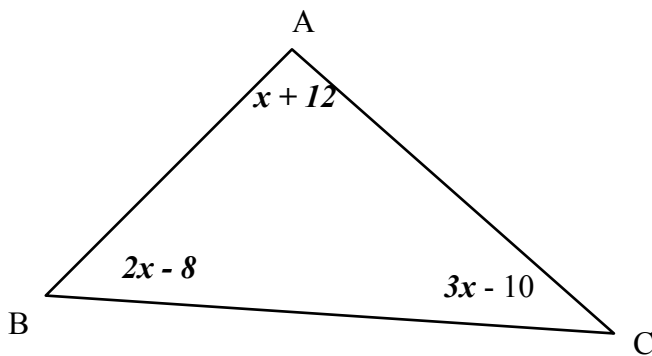
(b) State one assumption you made in working out your answer to part (a).

.....  
.....  
**(1)**

**(Total for Question 6 is 3 marks)**

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7. By considering the triangle below, find the value of  $x$ .



.....  
**(Total for Question 7 is 3 marks)**

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8. What is 10% of 50 plus 25% of 60 plus 20% of 150 subtract 40% of 80 ?

.....  
(Total for Question 8 is 3 marks)

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9. Expand and simplify  $2(x + 3) + 3(2x - 1)$

.....  
(3)  
(Total for Question 9 is 3 marks)

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10. Solve the simultaneous equations

$$5x + y = 21$$

$$x - 3y = 9$$

$x = \dots\dots\dots, y = \dots\dots\dots$

**(Total for Question 10 is 4 marks)**

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**11.** Jack and Sadia work for a company that sells boxes of breakfast cereal.

The company wants to have a special offer.

Here is Jack's idea for the special offer.

Put 25% more cereal into each box and do **not** change the price.

Here is Sadia's idea.

Reduce the price and do **not** change the amount of cereal in each box.

Sadia wants her idea to give the same value for money as Jack's idea.

By what percentage does she need to reduce the price?

**(Total for Question 11 is 3 marks)**

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**12**  $v^2 = u^2 + 2as$

$u = 12$     $a = -3$     $s = 18$

Work out a value of  $v$ .

.....  
(4)

**(Total for Question 12 is 4 marks)**

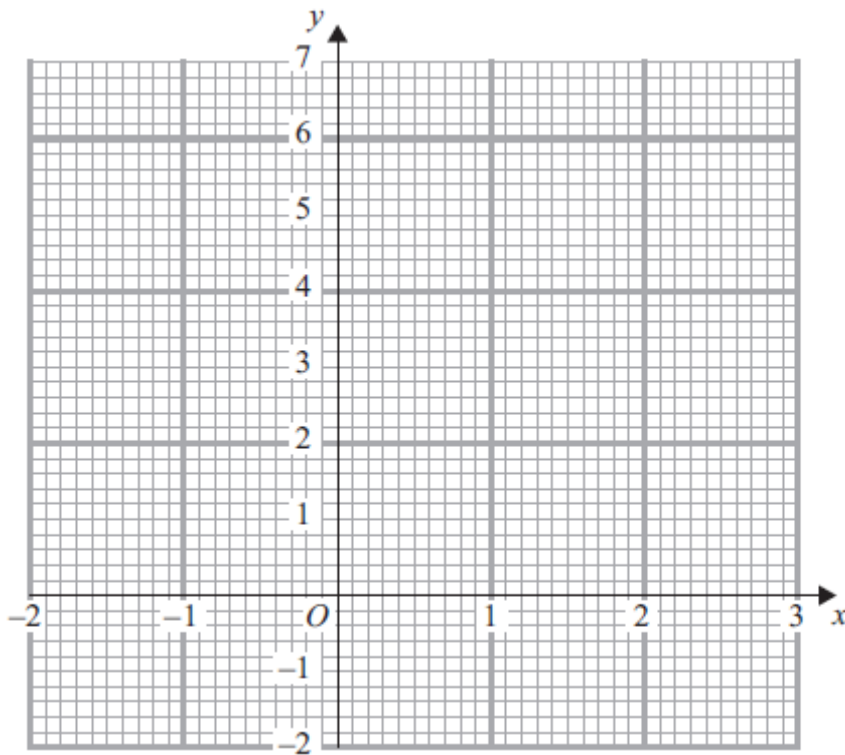
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13. (a) Complete the table of values for  $y - x = 3$

|     |    |    |   |   |   |   |
|-----|----|----|---|---|---|---|
| $x$ | -2 | -1 | 0 | 1 | 2 | 3 |
| $y$ | 1  |    | 3 |   |   |   |

(2)

(b) On the grid, draw the graph of  $y - x = 3$



(2)

(Total for Question 13 is 4 marks)

14.  $-2 < n \leq 5$   
 $n$  is an integer.

(a) Write down all the possible values of  $n$ .

.....  
(2)

(b) Solve the inequality  $7x - 4 > 24$

.....  
(2)

(Total for Question 14 is 4 marks)

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15. (a) Simplify  $y^{-3} \times y^5$

.....  
(1)

(b) Simplify  $\frac{p^6}{p^{-5}}$

.....  
(1)

(Total for Question 15 is 2 marks)

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**16.** Two shops both sell the same type of suit.  
In both shops the price of the suit was £180

One shop increases the price of the suit by  $17\frac{1}{2}$  %.

The other shop increases the price of the suit by  $22\frac{1}{2}$  %.

Calculate the difference between the new prices of the suits in the two shops.

£.....  
**(3)**

**(Total for Question 16 is 3 marks)**

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- 17.** A bonus of £2100 is shared by 10 people who work for a company.  
40% of the bonus is shared equally between 3 managers.  
The rest of the bonus is shared equally between 7 salesmen.

One of the salesmen says,

“If the bonus is shared equally between all 10 people I will get 25% more money.”

Is the salesman correct?

You must show how you get your answer.

.....  
**(5)**

**(Total for Question 17 is 5 marks)**

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**END OF PAPER**