

Year 10 Mathematics A

EXAMINATION Paper 1

Semester 1 2020

St Leonard's College An education for life.

Question Booklet

STUDENT NAME:

TEACHER(S): Mr. Biller Ms. Daniels Mr. Pankhurst Ms. Race Ms. Singh Mr. Wever

TIME ALLOWED: Reading time 10 minutes

Writing time 60 minutes

INSTRUCTIONS

All questions are to be answered. All answers are to be written on the examination paper. Write your answers clearly with relevant working shown. Exact answers are required unless specified otherwise.

Materials permitted: No reference materials are allowed to be used except for the formula sheet provided with this examination paper. No calculators are allowed to be used.

STRUCTURE OF BOOKLET / MARKING SCHEME

Exam Section	Number of questions to be answered	Total marks
А	13	45

Students are not permitted to bring mobile phones and / or any other unauthorized electronic devices into the examination room.

1.	Expand	and	simplify:	
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(x+5)(2x-3)2 marks **2.** Find the total surface area of the cylinder below, giving your answer in terms of π . 6 cm 20 cm 3 marks **3.** Simplify the following: **(b)** $-3\sqrt{5} \times 2\sqrt{6}$ (a) $2\sqrt{32}$ 1 mark 1 mark (**d**) $6\sqrt{45} - 4\sqrt{5}$ (c) $\frac{8\sqrt{15}}{24\sqrt{3}}$ 1 mark 2 marks

4. Factorise the following expression	ns:		
(a) $7n^2 - 21n$		(b) $x^2 - 11x - 12$	
(c) $4x^2 + 4x - 3$	mark	(d) $(x+1)^2 - 9$	1 mark
2	marks		2 marks
2 I	marks		2 marks
5. Solve the following for <i>x</i> :			
(a) $5x - 10 = -8x + 2$		(b) $\frac{x}{2} + \frac{2x}{3} = 7$	
2	marks		2 marks
(c) $x^2 + 6x = -8$			
2	marks		

6. Solve the following pair of simultaneous equations:

$$\begin{aligned} x - 4y &= 6\\ 3x - 6y &= 15 \end{aligned}$$

3 marks

7. There are 3 orange lollies and 5 red lollies in a bag. Sarah takes a lolly at random. She eats the lolly and then takes another lolly at random.

Calculate the probability that both the lollies are the same colour. Space for a diagram.

3 marks

8. Simplify the following surds by rationalising the denominator.

(a)
$$\frac{1}{\sqrt{5}}$$

(b)
$$\frac{3\sqrt{2}}{5-\sqrt{3}}$$

1 mark

9. Out of a group of 100 Year 10 students, 40 enjoy going to the movies on the weekend. 30 enjoy playing sports. 15 enjoy both going to the movies and playing sport.

(a) Find the probability that a student enjoys going to the movies given they enjoy playing sport.

1 mark

(b) Are the events going to the movies and playing sport independent? You must use Mathematics to support your answer.

2 marks

10. Find the exact volume of a cone with a diameter of 8 cm and a height of 12 cm.

2 marks

11. Sketch and clearly label the following lines on the axes provided:



- 12. The relationship 2x + 5y = 20 gives a linear graph.
- (a) Calculate the *x* and *y* intercepts for this graph.

2 marks

(b) Sketch the graph on the axes provided.



1 mark

(c) Find the equation of the line parallel to 2x + 5y = 20 passing through the point (5,9)

	2 marks
13. In the right-angled triangle shown, Use Pythagoras' theorem to find the len fully simplify your answer.	m and n differ in length by 1 cm. ngth of the unmarked side in terms of n . You should
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	- 2 marks

END OF EXAMINATION

2 marks