

1. A fair spinner has the numbers 1, 2 and 3 on it. The spinner is spun twice and the numbers multiplied together.

(a) Complete the table below to show the outcomes of the product.

		1 st spin		
		1	2	3
2 nd spin	1			
	2			
	3			

1 mark

(b) Find the probability of obtaining an even total.

(c) Find the probability of obtaining an odd total given the total is more than 4.

1 + 2 = 3 marks

2. (a) Complete the two-way table shown below.

	A	A'	
B	3		12
B'		6	
	5		20

1 mark

(b) State $n(A \cap B)$.

(c) Find $\Pr(A|B)$.

1 mark

2 marks

(d) Are events A and B independent? Justify, clearly with a mathematical reason.

2 marks

3. Solve the following equations for x .

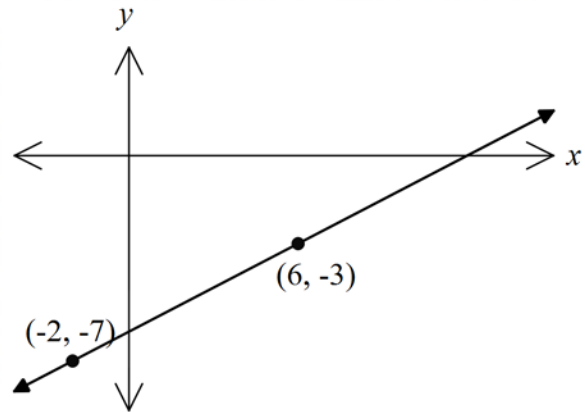
(a) $4x - 2 > 10$

(b) $\frac{2(x+1)}{3} + 1 = \frac{4-x}{5}$

2 + 3 = 5 marks

4. Consider the straight line graph shown below right.

(a) Find the gradient of the line.



1 mark

(b) Find the equation of the line perpendicular to the line shown above and that passes through the point $(2, 3)$.

2 marks

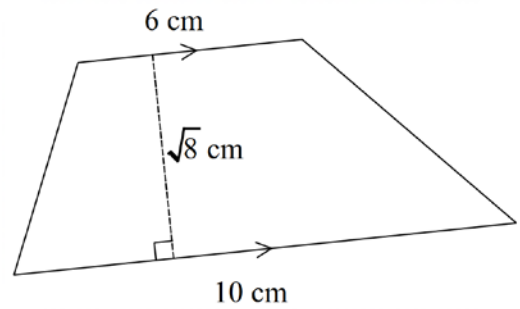
5. Solve the simultaneous equations given below using substitution.

$$2x - 3y = 11$$

$$y = x - 5$$

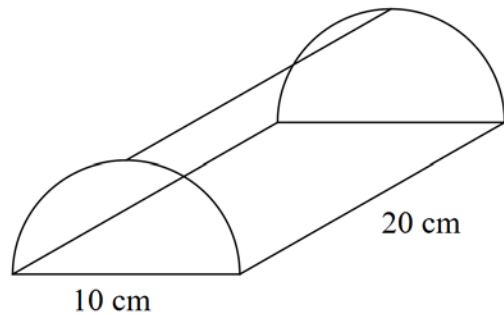
3 marks

6. Find the exact, simplified area of the shape shown in cm^2 .



2 marks

7. A child's toy block is solid and in the shape of a half-cylinder with dimensions as shown.



(a) Find the exact volume of the block in terms of π .

(b) Find the total surface area of the block to be painted, in cm^2 in terms of π .

2 + 3 = 5 marks

8. Simplify the following. Expand where necessary and rationalise any denominators.

(a) $\sqrt{48} - 2\sqrt{2} + 5\sqrt{3}$

(b) $\sqrt{\frac{5}{16}}$

2 + 2 = 4 marks

(c) $(2\sqrt{3} + \sqrt{6})(3\sqrt{2} - 2)$

2 marks

9. Factorise the following.

(a) $4x^2 - 25$

(b) $6x^2 - 5x - 6$

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1 + 2 = 3 marks

10. Solve the following equations algebraically.

(a) $2x^2 - 4x = 0$

(b) $x(x + 3) = 40$

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2 + 3 = 5 marks

11. Factorise $x^2 + 8x + 10$ by first completing the square.

3 marks