

Candidate's Name: Mr/Ms \_\_\_\_\_

Identity no: \_\_\_\_\_ Seat no: \_\_\_\_\_

**B C A A C A D E M Y****SCHOOL OF BUILDING & DEVELOPMENT  
SINGAPORE****MATHEMATICS SCREENING TEST (SET 1)****1.5 HOURS****Instructions to candidates**

1. Do **not** turn over this page until you are told to do so.
2. Check that you have the correct test paper, number of pages and questions.
3. This paper consists of TEN (10) questions (100 marks). Answer ALL questions.
4. Write your **Name**, **IC NO.** and **Seat No.** on this cover page.
5. All answers are to be written in This Booklet.
6. Do **NOT** tear out any page. This test paper is the property of BCA Academy and **must not be removed** from the test centre.
7. All mobile phones and electronic equipment are to be switched off.
8. Candidates are to bring their own non-programmable scientific calculator.
  - Unless otherwise stated, leave your answer in 3 significant figures.
  - Unless the questions require the answer in term of  $\pi = 3.142$  should be used.
  - If working is needed for any question, it must be shown with the answer. Omission of essential working will result in loss of marks.

For Official Use:	Marker:	Checker:	Marks/100

1. Simplify the following expressions:

(a)  $\frac{x+4}{x^2+3x+2} + \frac{x-2}{x^2+2x}$  (5 marks)

(b)  $\frac{3x^2+5x-2}{2x^2+7x+6}$  (5 marks)

2. (a) Find the value of x:

$$\frac{2}{x-1} - \frac{5}{3x-1} = 1$$

(5 marks)

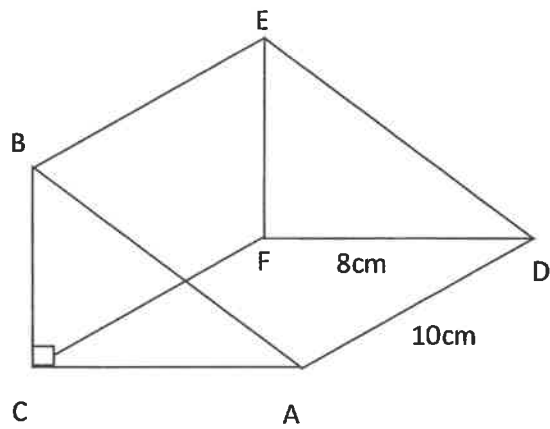
- (b) Make b the subject:

$$a = \frac{2b+3}{b-4}$$

(5 marks)

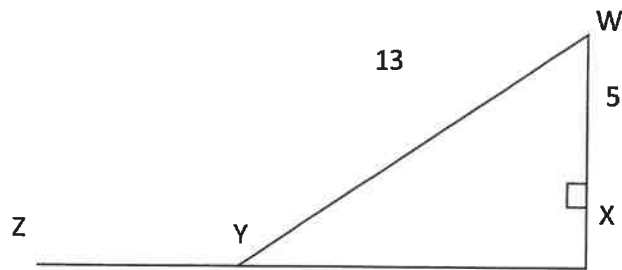
3. The diagram shows a right-angled triangular prism.  $AD = 10$  cm,  $FD = 8$  cm and angle  $ACB = 90^\circ$ . If the volume of the prism is  $240$   $\text{cm}^3$ , calculate

- (a) the area of triangle  $EFD$ ,
- (b) the length of  $EF$ ,
- (c) the length of  $ED$ ,
- (d) the total surface area of the prism.



(10 marks)

4.



WXY is a right-angled triangle in which angle  $WXY = 90^\circ$ ,  $WX = 5$  cm and  $WY = 13$  cm. The point D lies on XY produced.

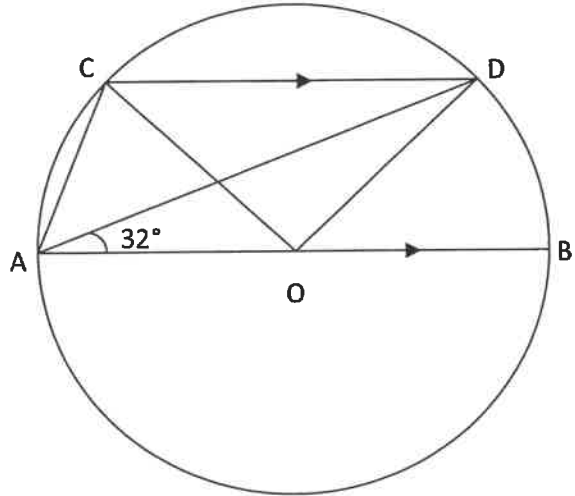
- (a) Calculate XY.
- (b) (i) Find angle WYX,  
(ii) Find angle WYZ.

(10 marks)

5. In the figure,  $AB$  is the diameter of the circle, centre  $O$  and  $CD \parallel AB$ .

If angle  $DAO = 32^\circ$ , find

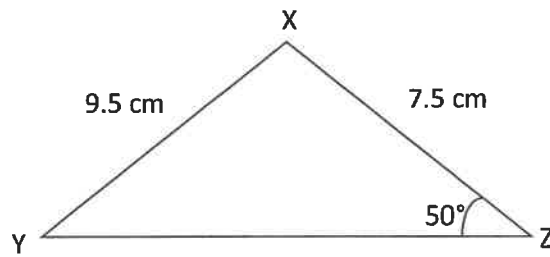
- (a) angle  $DOB$ , (2 marks)
- (b) angle  $COD$ , (3 marks)
- (c) angle  $CAD$ , (2 marks)
- (d) angle  $ACD$ . (3 marks)



6. In a test, Jayden obtained 12 marks more than Kayden. Kayden's marks were doubled that of David's marks. Their total marks were 182 marks. Find
- (a) Jayden's marks (3 marks)
  - (b) Kayden's marks (3 marks)
  - (c) David's marks (4 marks)

7. The diagram below shows a triangle XYZ in which angle XZY =  $50^\circ$ , XZ = 7.5 cm and XY = 9.5 cm. Find

- (a) angle XYZ  
(b) angle YXZ  
(c) Length YZ (10 marks)





8. There are 8 black markers, 10 blue markers and 6 red markers in a box.

Mr Ang chooses a marker from the box randomly. Find the probability that the marker chosen is

- (a) black,
- (b) not red,
- (c) neither blue nor black,
- (d) either red or black. (10 marks)

9. Miss Chung travels a distance of 196 km by train and returns in a car which travels 21 km/h faster than the train. If the total journey takes 11 hours, find
- (a) the speed of the train
  - (b) the speed of the car
- (10 marks)

10. Solve the following equations:

(a)  $2^{2x+3} + 2^{x+3} = 1 + 2^x$  (5 marks)

(b)  $\log_3(4x+1) = 1 + 2\log_3(2x)$  (5 marks)

