Centre Number	Candidate Number

MINISTRY OF EDUCATION AND HUMAN RESOURCES DEVELOPMENT

SOLOMON ISLANDS FORM THREE EXAMINATION

2016

MATHEMATICS

WEDNESDAY 2ND NOVEMBER 9.00AM   **TIME: 2 HOURS plus 10 min. Reading time**

SECTION	CONTENT	MARKS
A	Multiple Choice Questions	20
B	Short Answer Questions	40
C	Long Answer Questions	40
	TOTAL	**100**

INSTRUCTIONS TO CANDIDATES

1.   Do not open this Booklet until you are told to do so.
2.   Write both your Centre Number and Candidate Number in the box provided at the top right hand corner and the back flap at the end of this booklet.
3.   Before you answer the questions, read through the instructions carefully.
4.   Write all your answers in the spaces provided in this Booklet.
5.   Calculators should not be used.
6.   Three figure tables are provided.
7.   Show all your workings for Sections B and C. You may lose some marks if you do not show your working.

THIS BOOKLET CONTAINS 26 NUMBERED PAGES.

SECTION A: MULTIPLE CHOICE   (20 MARKS)

WRITE THE LETTER OF THE MOST CORRECT ANSWER IN THE BOX PROVIDED IN THE BACK FLAP.

1.   If $a = 4 \; and \; b=2$, the value of $(-a) - (-b)^3$ is equal to:

   A.   -4
   B.   4
   C.   -12
   D.   12
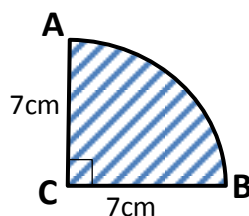
2.   The number 0.000 005 76 written in standard form is

   A. 5.76×10^{-6}

   B. 5.76×10^{-7}

   C. 5.76×10^{-8}

   D. 5.76×10^{-9}

3.   The ratio $\frac{1}{2} : 0.25$ to its simplest form is

   A. $25 : \frac{1}{2}$

   B. $\frac{1}{4} : \frac{1}{2}$

   C.   1:2
   D.   2:1

4.   In the diagram, C is the centre of the circle.
     Using $\pi = \frac{22}{7}$, find the arc length of AB.
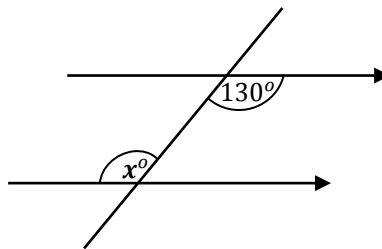
   A.   7 cm
   B.   11 cm
   C.   22 cm
   D.   44 cm

5. The simplest form of the expression $\dfrac{a^2b - ab^2}{ab}$ is

   A. $a - b$
   B. $a - ab$
   C. $a^2 - b$
   D. $\dfrac{a-b}{a}$

6. The size of angle 'x' in the diagram below is

   A. 50°
   B. 90°
   C. 130°
   D. 150°

7. $\dfrac{3}{4} + \dfrac{6}{8} \div \dfrac{3}{4}$ is equal to:
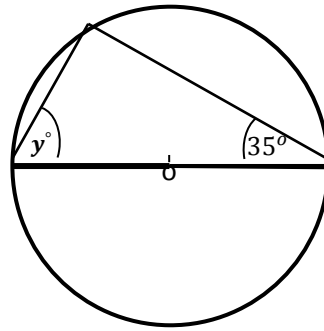
   A. $\dfrac{3}{4}$

   B. $\dfrac{7}{4}$

   C. 3

   D. $\dfrac{27}{16}$

8. Convert 0.672 km converted to millimetres.

   A. 672 mm
   B. 6 720 mm
   C. 67 200 mm
   D. 672 000 mm

9. The size of the angle marked with letter y is:

   A. 25°

   B. 35°

   C. 45°

   D. 55°

10. The gradient of the linear equation $3y - 2x = 12$ is:

    A. 2

    B. -2

    C. $\dfrac{2}{3}$

    D. $-\dfrac{2}{3}$

11. Which of the following shapes is **NOT** a quadrilateral?

    A. Rhombus
    B. Pentagon
    C. Trapezium
    D. Rectangle

12. Peter, Gerald and Nathan shared $240.00 in the ratio 2:3:1. The amount that Gerald gets is:

    A. $40.00
    B. $80.00
    C. $120.00
    D. $1040.00

13. If $I=PRT$, what is the value of P when $I=$\$3 000.00, $R=15\%$ p.a. and $T=$ 4 $months$.

    A. $5 000.00
    B. $6 000.00
    C. $15 000.00
    D. $60 000.00

14. Expand $(2a^5 + 3a^4) \times 5a^4$ is equal to

    A. $10a^9 + 3a^8$

    B. $10a^9 + 15a^4$

    C. $10a^9 + 15a^8$

    D. $10a^5 + 15a^4$

15. In translation, $\begin{pmatrix} -3 \\ 5 \end{pmatrix}$ means

    A.   Move 3 units up and then move 5 units to the left
    B.   Move 3 units down and then move 5 units up
    C.   Move 3 units to the left and then move 5 units up
    D.   Move 3 units to the right and then 5 units down

16. The *median* of the following set of data: 2, 5, 3, 1, 8, and 6 is:

    A.   6
    B.   8
    C.   4
    D.   24

17. If 10 litres of petrol at the Quan Chee Refilling Station cost $110.00. How much would 4 litres of petrol cost?

    A. $11.00
    B. $27.50
    C. $40.00
    D. $44.00
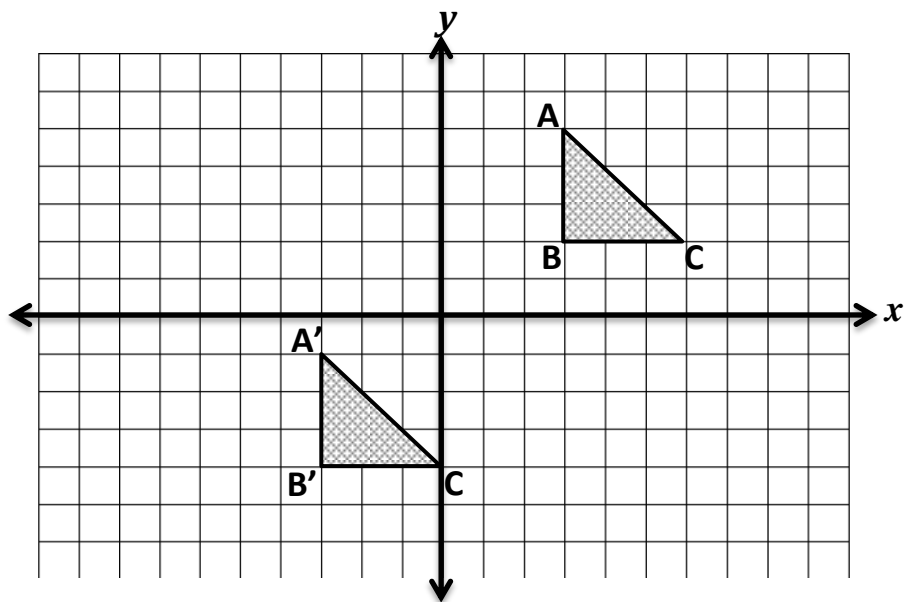
18. If the scale on the map is given as 1:500 000, the true distance represented by 1.5 cm on the map is:

   A.   7.5 km
   B.   75 km
   C.   750 km
   D.   7 500 km

19. The value of $\sqrt{0.01}$ is

   A.   0.1
   B.   1.0
   C.   0.01
   D.   0.0001

20. Triangle A'B'C' is the image of triangle ABC under the translation described by which vector? Each square is one (1) unit.

   A. $\begin{pmatrix} 6 \\ -6 \end{pmatrix}$

   B. $\begin{pmatrix} 6 \\ 6 \end{pmatrix}$

   C. $\begin{pmatrix} -6 \\ -6 \end{pmatrix}$

   D. $\begin{pmatrix} -6 \\ 6 \end{pmatrix}$

SECTION B: SHORT ANSWERS QUESTIONS   (40 MARKS)

SHOW YOUR WORKING AND WRITE THE ANSWER ON THE SPACES PROVIDED. ALL QUESTIONS ARE WORTH 2 MARKS EACH.

21.   Factorise and simplify $\dfrac{2x^2 - x}{x}$

Ans = _____

(2 marks)

_____

22.   If $B = 2\dfrac{1}{2}G$ and $G + B = 42$, find the value of G

G = _____

(2 marks)

_____

23.   Mary bought a car for $45,000.00. A year later she sold it at a loss of 15%. How much did she sell the car for?

Selling price = _____

(2 marks)

_____

24. Express the ratio 1½ : 2¼   in its simplest form.

$$1\tfrac{1}{2} : 2\tfrac{1}{4} = \rule{3cm}{0.4pt}$$

(2 marks)

___

25. Calculate $(15 \times 24) - (43 + 35 \div 7)$

Ans = \rule{3cm}{0.4pt}

(2 marks)

___

26. What is Ben's average speed if he runs a distance of 15 km in 1 hour and 20 minutes?

Speed = \rule{3cm}{0.4pt}km/h

(2 marks)

___

27. The percentage of National income of Solomon Islands from various exporting products are shown in the pie chart.
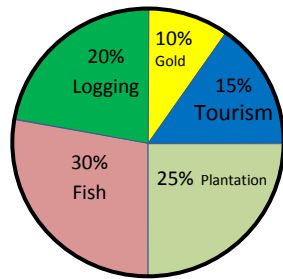
(a) Name and express the highest export product as a fraction in its simplest form.

Ans = _____

(1 mark)

(b) Find the angle measured for Plantation sector.

Size of angle for Plantation sector = _____ degrees

(1 mark)

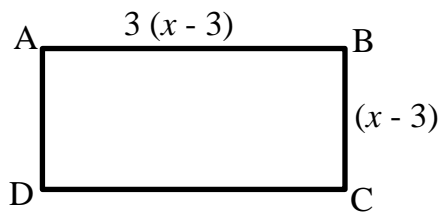28. Find the area of this shape
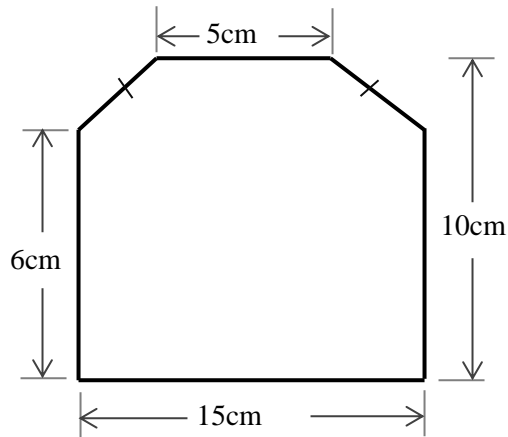
Area = _____cm^2

(2 marks)

_____

29. The ratio of T-shirts to jeans in a shop is 7:3. If there are 203 T-shirts, find the number of jeans.

No. of Jeans = _____

(2 marks)

_____

30. Given the perimeter of rectangle ABCD is 56cm. Find the value of x

A 3 $(x - 3)$ B
$(x - 3)$
D C

$x =$ _____
(2 marks)

31. The ANZ Bank pays an interest of 3.5% p.a to a saving account. If the balance in Peter's saving account for March is $200, what interest does he receive?
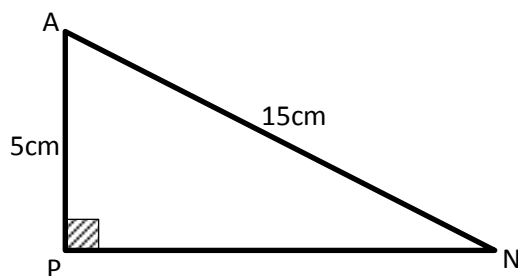
Interest received = _____m
(2 marks)

32. A tennis match which lasted for 75 minutes finished at 3.30pm. At what time did this match begin?

Beginning time = _____

(2 marks)

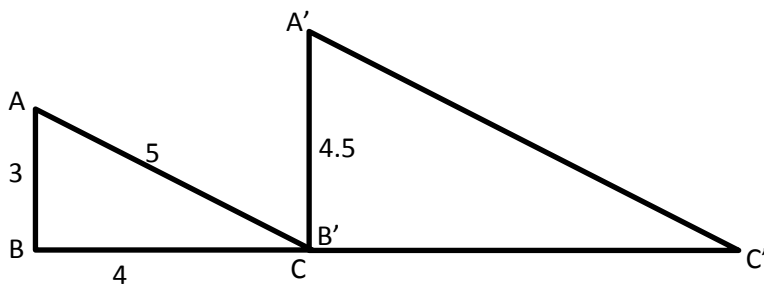33. Find the length of PN (Round to the nearest whole number)

PN = _____

(2 marks)

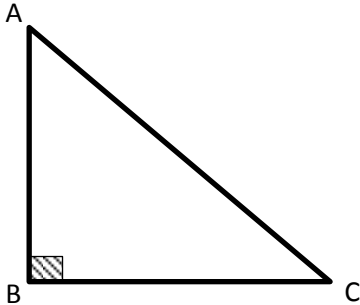34. Triangle ABC is enlarged to A'B'C'. What is the length of A'C'.

A'C' = _____

(2 marks)

35. A fisherman went fishing for six days. He caught an average of 8 fish. In the first five days, the total number of fish caught was 37. How many fish was caught on the sixth day?
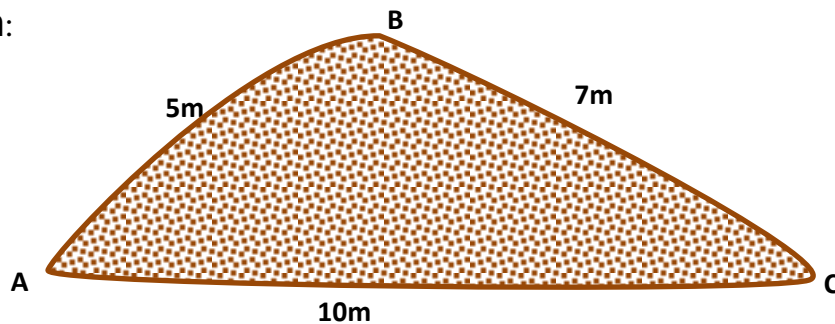
No. of fish = _____

(2 marks)

36. In triangle ABC, ABC = 90° and BC = 6 cm. If the area of ABC is 21 cm^2, calculate the height AB.

AB = _____

(2 marks)

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37. Chengko grows vegetables in a triangular piece of land area as shown:

Using the **sine rule** for calculating area of triangles (i.e.; Area = ½ **ab**sin**C**)

(a) Use the information given in the diagram; write an **equation** to find the area of land Chengko uses to grow vegetables. Write the equation in simplified form.

Equation is:_____

(1 mark)

13

(b)   If the angle at point A is 45 $^\circ$ and angle at point C is 15°, find the area of the land used. (Use sine 45° = 0.7, and sine 30° = 0.5)

Area =_____m^2

(1 mark)

_____
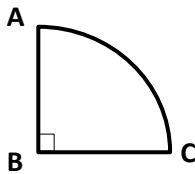
38.   The diameter of the Earth is approximately 12700 km. Calculate the circumference to the nearest thousand kilometres. (п = 3.14)

Circumference = _____ km

(2 marks)

_____

39.   Calculate the area of sector ABC when AB = 28m and п = $\frac{22}{7}$.

Area = _____m^2

(2 marks)

_____

14

40. The time taken to use all the air in a small diving tank is given by the formula $T = \frac{750}{D} - 5$, where D is the depth of the dive in metres. Janice dives to a depth of 30m. How long will her tank last?

Ans = _____

(2 marks)

SECTION C: LONG ANSWER QUESTIONS (40 MARKS)

SHOW YOUR WORKING AND WRITE THE ANSWER IN THE SPACE PROVIDED.

41. The length of a rectangular lawn is 9 metres more than its breadth. The perimeter is 138 metres.

   a) Using **x** metres, to represent its breadth, write the expression for its length.

   Length = _____
   (1 mark)

   b) Write the equation for the perimeter.

   Perimeter = _____
   (1 mark)

c) Solve the equation to find the breadth

Breadth = _____

(2 marks)

42. Form 3 Jupiter has the following number of periods for each subject in their timetable each week.

Subjects	Number of periods
Maths	7
English	8
Home Economics	5
Social Studies	7
Science	7
Industrial Arts	4
Agriculture	4
Business Studies	4
Physical Education	2

Using the information above, draw and label a bar graph for the number of periods for each subject in a week in the space below.

(4 marks)

43. A pole PR stands on the top of the building BR. From a point A, located 80m from B, the angles of elevation of the top of the building and the top of the pole are 43° and 52° respectively.
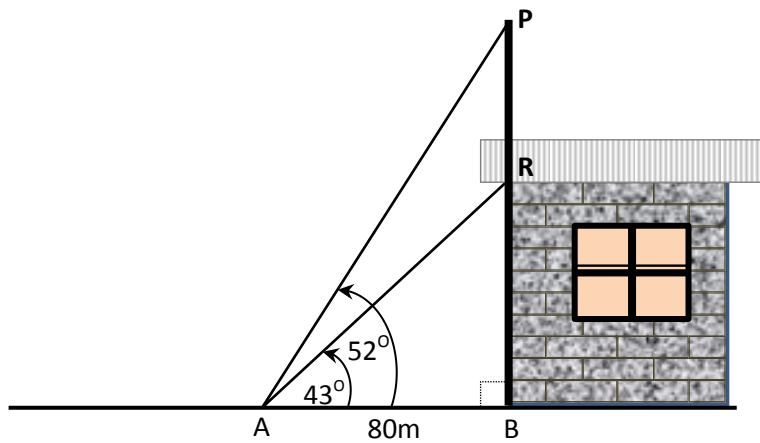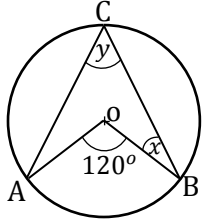

a) Find the height of the wall BR correct to the nearest metre.

Height of BR = _____ m

(2 marks)

b) Find the height of the pole PR correct to the nearest metre

Height of PR = _____ m

(2 marks)

44. Study the diagram below and find the value of **x** and **y** :

HINT: AC and BC are equal chords of the circle, with centre **O**. Angle AOB equals 120°.

Find the value of:

a)   Angle y :

Angle $y =$ _____ °

(2 marks)

b)   Angle x :

Angle $x =$ _____ °

(2 marks)

45. The mixing instructions on a bottle of insecticides stated that 120 ml of insecticides should be mixed with 36 litres of water. This can be used to cover an area of 80 m^2 of lawn. Using this information find:

a) The amount of insecticides needed to cover 10 m^2.

Insecticides needed = _____

(2 marks)

b) How much insecticides should be mixed with 1 litre of water.

Insecticides needed = _____

(2 marks)

46. By travelling at 200 km/hr, it takes 30 minutes for the Solomon Airline plane to fly from Honiara to Auki.

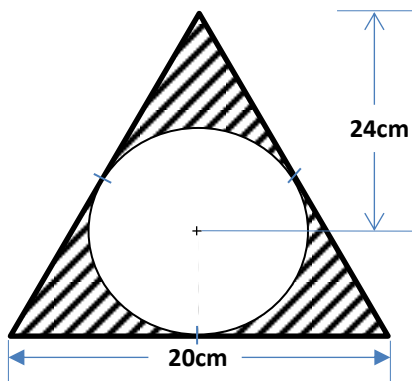(a) Calculate the distance between Honiara and Auki.

Distance = _____
(2 marks)

(b) How many minutes will it take to travel at 300 km/hr to cover the distance in (a) above?

Time taken = _____
(2 marks)

47. Calculate the area of the shaded region if radius of the circle is 9 cm and п = 3.1
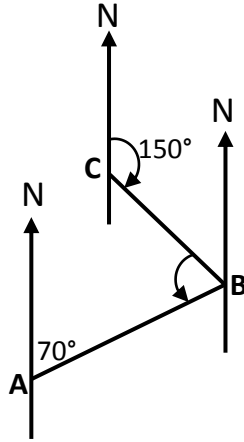

Area shaded = _____ cm^2

(4 marks)

_____

48. The price of a tin of Taiyo Chillie Tuna increased from $10.00 to $14.00. The price of Solomon Blue in the same store increased from $9.00 to $13.00. Which type of taiyo has a greater percentage increase?

Taiyo with higher % increase = _____

(4 marks)

49. In the diagram, the bearing of B from A is 70°.

(a) What is the size of angle ABC?

Angle ABC=_____

(2 marks)

(b) What is the bearing of C from B?

Bearing of C from B=_____

(2 marks)

50. A farmer owns a farm of 200 hectares and buys another property with an area of 2.68km^2. (**Note: 1 hectare = 10 000m^2**)

(a) Calculate the total area of the properties in hectares

Total area = _____ha

(3 marks)

(b) Express your answer in part (a) above in km^2

Total area = _____km^2

(1 marks)

_____

The End

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ANSWER SHEET - MULTIPLE CHOICE
You are to write the letter of the correct answer only

1		11	
2		12	
3		13	
4		14	
5		15	
6		16	
7		17	
8		18	
9		19	
10		20	

FOR MARKER USE ONLY

SECTION	MARKS	SCORE
A	20	
B	40	
C	40	
TOTAL	100	
Marker's Initial		