

Name: _____ ()

Class: _____



WHITLEY SECONDARY SCHOOL

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END-OF-YEAR EXAMINATION 2011

SUBJECT : Mathematics Paper 2

LEVEL : Sec 1 Express

DATE : 7 October 2011

DURATION : 1 hr 15 min

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VETTER(S) : Eddie Yong, Yong Kwee Fah,
Yap W. M.

READ THESE INSTRUCTIONS FIRST

Write your name and index number on all the work you hand in.
Write in dark blue or black pen on both sides of the paper.
You may use a pencil for any diagrams or graphs.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** the questions on writing paper provided.
If working is needed for any question it must be shown with the answer.
Omission of essential working will result in loss of marks.
Calculators should be used where appropriate.
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degree to one decimal place.
For π , use either your calculator value or 3.142, unless the question requires the answer in terms of π .

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [] at the end of each question or part question.
The total marks for this paper is 50.

This paper consists of 12 printed pages including the cover page.

1. Given the equation of a line is $y = -3x + 2$, write down the gradient of the line.

Answer: _____ [1]

2. Write down the n th term of this sequence.

1, 4, 7, 10, 13, 16, 19, ...

Answer: _____ [2]

3. Factorise the following completely:

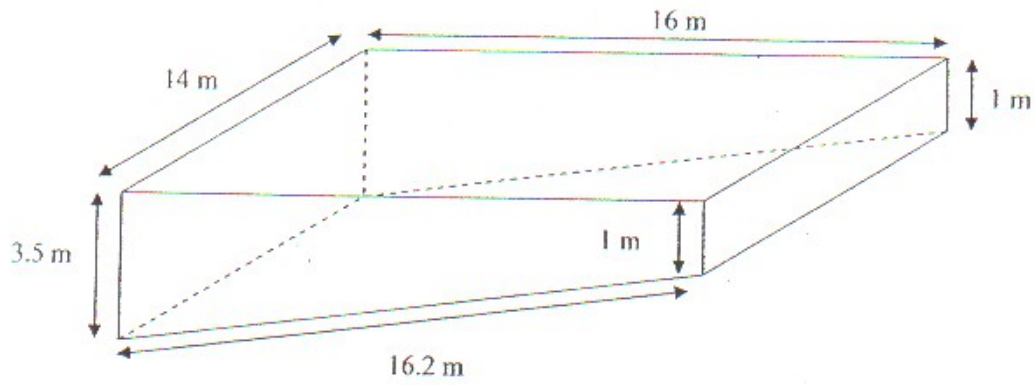
(a) $15ay + 20by$,

(b) $9tu - 3tv - 3ur + rv$

Answer: (a) _____ [1]

(b) _____ [2]

4. A rectangular swimming pool, 16 m long and 14 m wide, is fully filled with water. It is 1 m deep at one end and slopes uniformly down to 3.5 m at the other end.



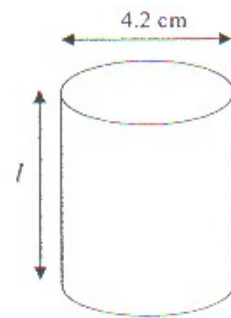
- Determine the cross-sectional area of the pool.
- Calculate the capacity of the pool.
- Calculate the total surface area of the pool in contact with the water.

Answer: (a) _____ m^2 [1]
 (b) _____ m^3 [1]
 (c) _____ m^2 [2]

5. Nancy bought a watch for \$135 inclusive of a 7% goods and services tax. Calculate the amount of tax to the nearest cent Nancy paid.

Answer: \$ _____ [2]

6. A metal rod has a diameter of 4.2 cm. Given that the volume of the rod is 225 cm^3 , determine the length as well as the total external surface area of the rod. (Take $\pi = 3.142$)



Answer: Length = _____ cm [2]

Surface Area = _____ cm^2 [2]

7. Jason travels by car at an average speed of 72 km/h and completes a journey in 45 minutes. On his return journey, he travels at an average speed of 45 km/h.
- (a) How long does the return journey take?
 - (b) If he rested for 35 minutes before making his return journey, what is the average speed of his entire journey?

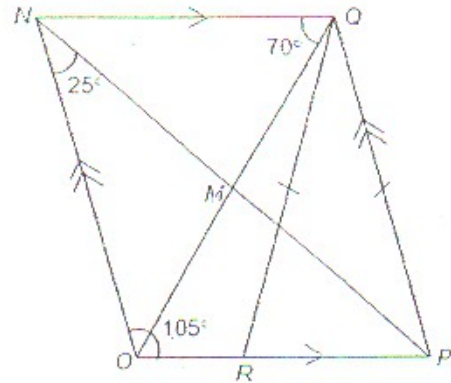
Answer: (a) _____ hour [1]

(b) _____ km/h [2]

8. $NOPQ$ is a parallelogram in which the diagonals intersect at M . R is a point on OP such that $QR = QP$. It is given that $\angle ONP = 25^\circ$, $\angle NQM = 70^\circ$ and $\hat{NOP} = 105^\circ$. Stating your reasons clearly, calculate the value of

(a) $\angle PNQ$,

(b) $\angle RQO$.



Answer: (a) _____ [2]

(b) _____ [3]

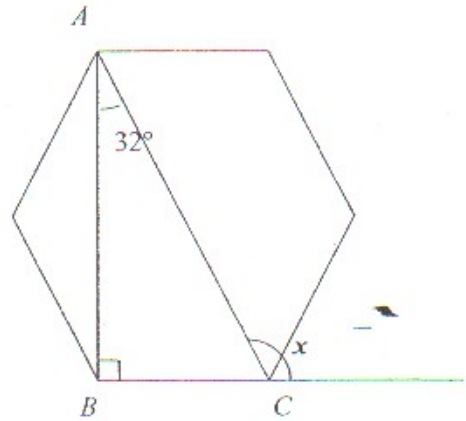
9. Mr Lin bought 25 markers. Some are red markers at 30¢ each and the rest are blue markers at 45¢ each. The total bill for the 25 markers was \$9.45.
- (a) If there are x red markers, write down and simplify an expression in x for
- (i) the cost of the red markers,
 - (ii) the cost of the blue markers.
- (b) Form an equation in x and solve it to find the number of blue markers.

Answer : (a) (i) \$ _____ [1]

(ii) \$ _____ [1]

(b) _____ blue markers [2]

10. A regular hexagon with six sides is shown below.
- Calculate the value of the sum of all interior angles within the hexagon,
 - Calculate the value of each exterior angle of the hexagon.
 - Given that $\angle BAC = 32^\circ$, find the value of x , the exterior angle of triangle ABC .



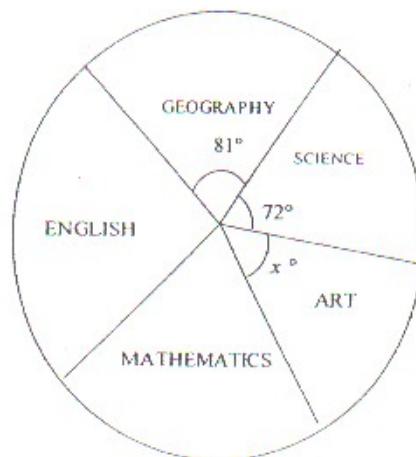
Answer : (a) _____ [2]

(b) _____ [2]

(c) _____ [1]

11. 160 students were asked to name their favourite subjects. The pie chart below shows the result of this survey.

- (a) Calculate the value of x if 16 students chose Art as their favourite subject.
- (b) How many more students chose Geography instead of Science as their favourite subject?



Answer: (a) $x =$ _____ [2]

(b) _____ students [2]

12. Complete the following in a single diagram

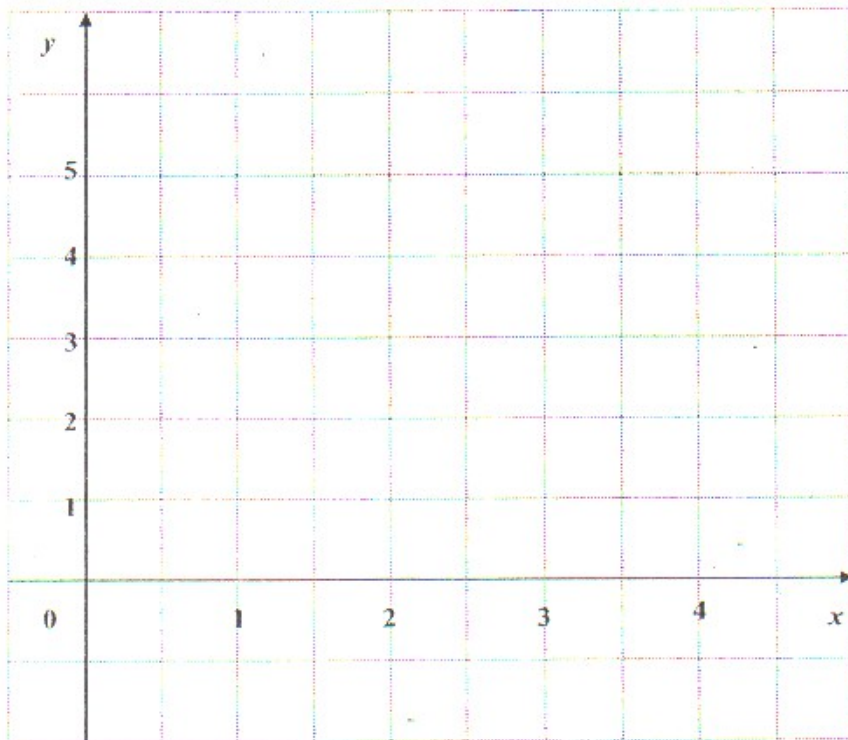
- (a) Construct and label rhombus $PQRS$ such that PQ is 7cm and $\angle PQR$ is 60° . [2]
- (b) Construct the perpendicular bisector of QR . [2]
- (c) Construct the angle bisector of $\angle QRS$. [2]
- (d) The perpendicular bisector of QR cuts the the angle bisector of $\angle QRS$ at X .
Measure and write down the length of RX .

Answer: (d) $RX =$ _____ cm [1]

14. Complete the table & draw the line for $y = x + 2$ on the grid below:

| | | | |
|-----|---|---|---|
| x | 0 | 1 | 2 |
| y | | | |

[1]



[2]

~ End of Paper ~

Answers

- Q1. -3
- Q2. $3n - 2$
- Q3 (a) $5y(3a + 4b)$
(b) $(3u - v)(3t - r)$
- Q4 (a) 36 m^2
(b) 504 m^3
(c) 362 m^2
- Q5. \$8.83
- Q6 (a) 16.2 cm
(b) 242 cm^2
- Q7 (a) 1.2 hour
(b) 42.6 km/h
- Q8 (a) 50°
(b) 5°
- Q9 (a) $\$0.3x$
(b) $\$0.45x$
(c) 13 blue markers
- Q10 (a) 720°
(b) 60°
(c) 122°

Q11 (a) $x = 36$

(b) 4

Q12 (d) $RX = 7 \text{ cm}$

Q13 (a) $A = (6, 2)$

(b) Gradient = 1