

2018

YEAR 8
YEARLY
EXAMINATION

Mathematics

**General
Instructions**

- Working time - 75 minutes
- Write using black pen
- NESA approved calculators may be used
- In questions 21-26, show relevant mathematical reasoning and/or calculations

**Total marks:
50**

Section I – 20 marks

- Attempt Questions 1-20
- Allow about 30 minutes for this section

Section II – 30 marks

- Part A: Attempt questions 21-24
- Part B: Attempt questions 25-26 (Advanced)
- Allow about 45 minutes for this section

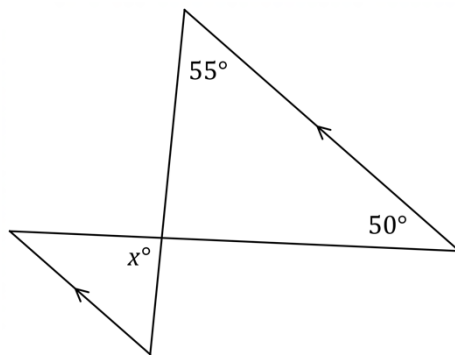
Section I**20 marks****Attempt questions 1 - 20****Allow about 30 minutes for this section**

Use the multiple-choice answer sheet for questions 1-20

1. The simple interest on \$500 for 3 years at an interest rate of 8% per annum is:

(A) \$24
(B) \$40
(C) \$80
(D) \$120

2.



Not to scale

What is the value of x ?

- (A) 50°
(B) 75°
(C) 90°
(D) 105°
3. At roll call, there were 4 students absent and 21 present.
What percentage of the roll class was absent?
- (A) 16%
(B) 19%
(C) 25%
(D) 84%
4. The straight line $y = 2x - 1$ passes through one of the following points. Which one?
- (A) (0, 2)
(B) (0, -2)
(C) (0, 1)
(D) (0, -1)

5. $y + 3 + 2(3y - 5)$ equals:

- (A) $7y - 7$
- (B) $7y + 13$
- (C) $4y - 5$
- (D) $4y - 10$

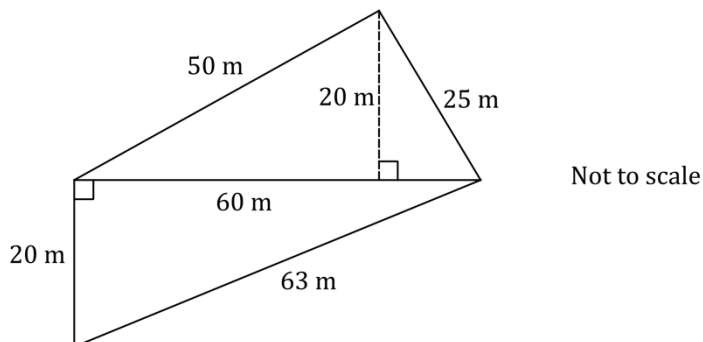
6. If the probability of tomorrow being a wet day is 0.25, then the probability of tomorrow *not* being a wet day is:

- (A) $\frac{1}{4}$
- (B) $\frac{1}{3}$
- (C) $\frac{1}{2}$
- (D) $\frac{3}{4}$

7. Oliver and Harry share \$12 000 in the ratio 2 : 3. What is Harry's share?

- (A) \$2400
- (B) \$4800
- (C) \$6000
- (D) \$7200

8. The diagram below shows some measurements of a park.



What is the area of the park?

- (A) 158 m^2
- (B) 1200 m^2
- (C) 1250 m^2
- (D) 1575 m^2

9. $(5x^2 \times 8y^4) \div (4x^0 \times 3y^2) =$

(A) $\frac{40x^2 y^2}{3}$

(B) $\frac{10x^2 y^2}{3}$

(C) $\frac{10x^2}{3y^2}$

(D) $\frac{10x^2}{3y^6}$

10. The ratio of 63 mm to 72 cm is most simply expressed as:

(A) 63 : 72

(B) 7 : 8

(C) 7 : 80

(D) 70 : 8

~~11.~~ Consider these two equations.

$$y = 3x - 1 \text{ and } y = 4x + 2$$

Which value of x satisfies both of these equations?

(A) $x = -3$

(B) $x = -1$

(C) $x = 1$

(D) $x = 3$

~~12.~~ Twenty students were asked how many hours of study they completed per week.

<i>Hours per week</i>	<i>Class centre</i>	<i>Frequency</i>
0 – 4	2	5
5 – 9	7	10
10 – 14	12	3
15 – 19	17	2

What is the mean number of hours of study completed by the students per week?

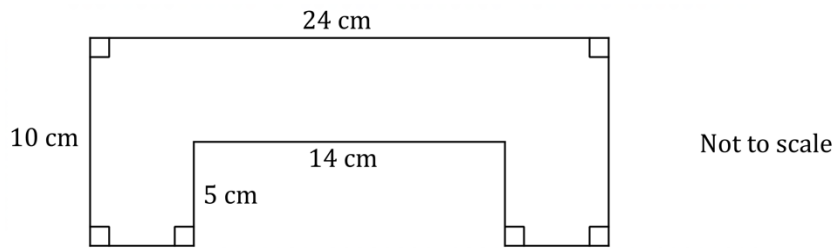
(A) 6.5

(B) 7.0

(C) 7.5

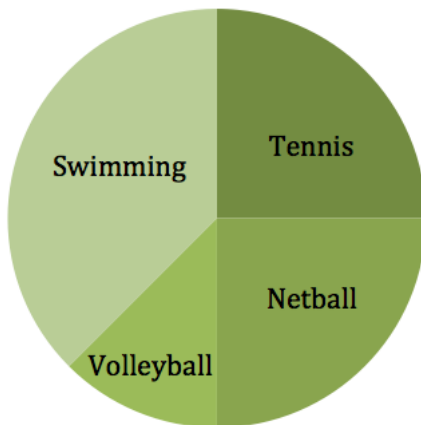
(D) 9.5

13. The shape below is symmetrical with all sides perpendicular to one another.



The perimeter of this shape is:

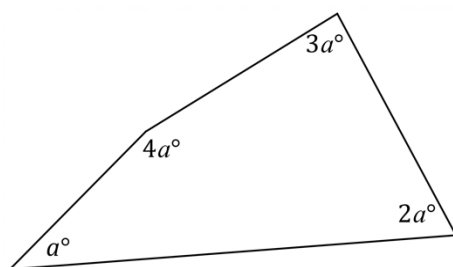
- (A) 44 cm
 - (B) 58 cm
 - (C) 78 cm
 - (D) 170 cm
14. A survey of 120 students was completed on their preferred sport. The results are shown below in the sector graph.



How many students choose tennis?

- (A) 30
 - (B) 60
 - (C) 90
 - (D) 108
15. Which of the following lines will be a vertical line?
- (A) $y = 4$
 - (B) $y = 100x$
 - (C) $x = -10$
 - (D) $y = 3x - 3$

16.



Not to scale

What is the value of a° ?

- (A) 36
 (B) 40
 (C) 45
 (D) 54

17. The expression $\frac{4x}{8} - \frac{x}{8}$ simplifies to:

- (A) 4
 (B) $3x$
 (C) $\frac{3x}{8}$
 (D) $\frac{1}{2}$

18. The area of a quadrant with a radius 10 cm is closest to:

- (A) 31.4 cm^2
 (B) 78.5 cm^2
 (C) 157.1 cm^2
 (D) 314.2 cm^2

19.

x	0	2	4
y	4	8	12

What is the correct rule for the above table?

- (A) $y = x + 4$
 (B) $y = 2x + 4$
 (C) $y = 2x + 2$
 (D) $y = 3x$

20. What is $x\%$ of $\$y$?

- (A) $\$xy$
 (B) $\$100xy$
 (C) $\$ \left(\frac{x+y}{100} \right)$
 (D) $\$ \left(\frac{xy}{100} \right)$

Section II Part A

20 marks

Attempt questions 21 - 24

Allow about 30 minutes for this section

Answer each question in the spaces provided.
Your responses should include relevant mathematical reasoning and/or calculations.

Question 21 (5 marks)	Marks
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|---|----------|
| (a) Increase \$100 by 10% and then decrease this amount by 10%. | 1 |
|---|----------|

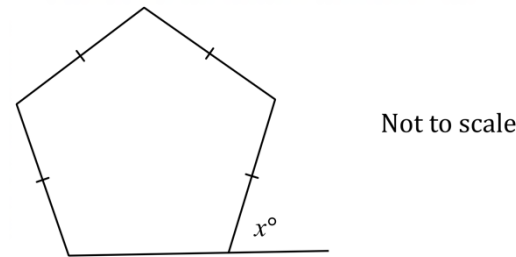
- | | |
|--|----------|
| (b) Express these ratios in simplest form. | 1 |
|--|----------|

(i) 18 : 6

(ii) 0.7 : 2

- | | |
|--|----------|
| (c) A circular pond has a diameter of 4 m.
Find the circumference of the pond correct to one decimal place. | 1 |
|--|----------|

- | | |
|---|----------|
| (d) What is the size of the exterior angle in the following regular pentagon? | 1 |
|---|----------|



Question 22 (5 marks)

Marks

(a) Solve the following equations.

(i) $a - 5 = 32$

1

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(ii) $3m + 10 = 5m - 6$

1

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(iii) $5(x - 8) = 60$

1

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(b) On a journey of 300 km the average speed was 75 km/h.
How long did the journey take?

1

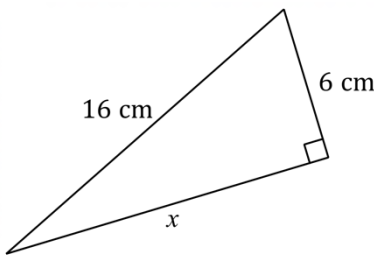
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(c)



Not to scale

1

Find the value of x correct to one decimal place.

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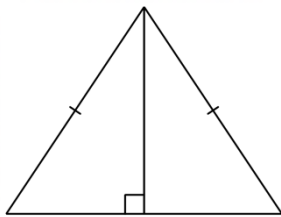
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Question 23 (5 marks)

Marks

~~(a)~~



1

Which congruence test would be used to prove the above pairs of triangles congruent?

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~~(b)~~

For the following scores – 25, 21, 22, 20, 19, 24, 20, 25, 20, 24 – find the:

(i) Mode

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(ii) Median

1

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(iii) Mean

1

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(c) A car travels 1058 km from Sydney to Melbourne in 11.5 hours.
What is the car's average speed?

1

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Question 24 (5 marks)

Marks

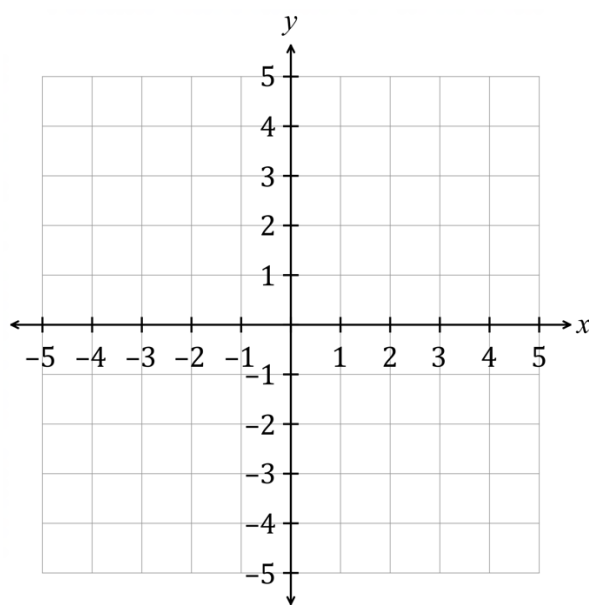
- (a) (i) Complete the table of values for $y = x + 2$.

1

x	-2	-1	0	1	2
y					

- (ii) Draw the graph of $y = x + 2$ on the number plane below.

1



- (iii) Using the graph, solve $x + 2 = -2$

1

- (iv) What is the value of y when $x = -7$?

1

- (b) A concrete mixture contains one part cement, two parts sand and three parts gravel. What percentage of the mixture is sand?

1

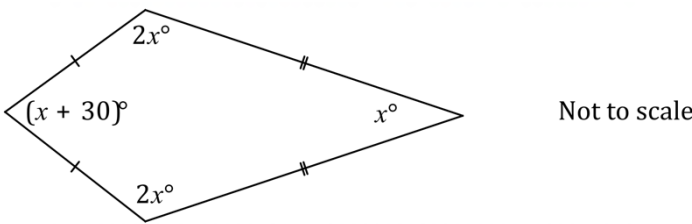
Section II Part B: Advanced

10 marks
Attempt questions 25 - 26
Allow about 15 minutes for this section

Answer each question in the spaces provided.
Your responses should include relevant mathematical reasoning and/or calculations.

Question 25 (5 marks) Marks

(a) 1



What is the value of x ?

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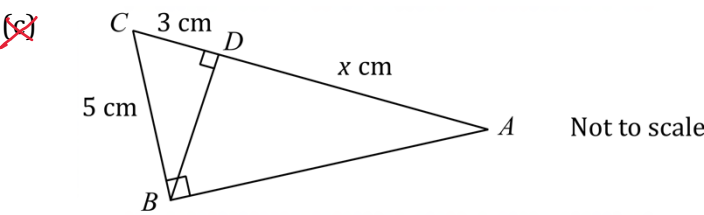
~~(b)~~ Alexander has a mean mark of 73% from 8 tests. What must Alexander score in the ninth test to increase his mean mark to 75%? 1

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(i) Prove that $\triangle BCD \sim \triangle ABD$. 1

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(ii) Find the value of x . 2

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Question 26 (5 marks)

Marks

- (a) A right-angled triangle is drawn inside a circle, using the diameter as the hypotenuse. If the diameter of the circle is 15 cm long and the shortest side of the triangle is 9 cm, what is the perimeter of the triangle?

2

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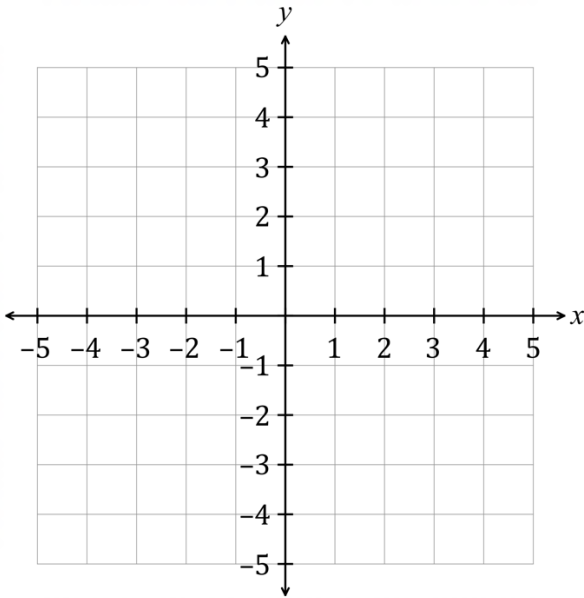
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- (b) (i) Graph $3x - y - 1 = 0$ and $y = x - 3$ on the number plane below.

2



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- (i) What is the point of intersection of the two lines?

1

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End of paper