

2020

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. Which of the following is an approximation for $\frac{14.4}{7.05 + 12.525}$?
- (A) 0.736
 - (B) 2.042
 - (C) 14.568
 - (D) 25.583
2. Simplify $4x + 3 + 5x =$
- (A) $9x + 3$
 - (B) $12x$
 - (C) $12 + x^2$
 - (D) $8x + 4$
- ~~3.~~ Consider the scores 7, 5, 7, 2, 9. Which is *not* equal to 7?
- (A) Mean
 - (B) Median
 - (C) Mode
 - (D) Range
4. Maya's electricity bill was \$360 last month. This month it is \$270.
What is the percentage decrease?
- (A) 25%
 - (B) 33%
 - (C) 45%
 - (D) 55%
5. $-36 \div -4 \times 3 =$
- (A) -27
 - (B) -3
 - (C) 3
 - (D) 27

6. What is the value of x if $x : 12 = 8 : 4$?

(A) $\frac{4}{4} \times 12$

(B) $\frac{8}{4} \times 12$

(C) $\frac{4}{12} \times 8$

(D) $\frac{8}{12} \times 4$

~~7.~~ A bag of apples contains six green ones and thirteen red ones. What is the probability of choosing at random a green apple?

(A) $\frac{1}{2}$

(B) $\frac{6}{13}$

(C) $\frac{6}{19}$

(D) $\frac{13}{19}$

~~8.~~ Which is an example of categorical data?

(A) Make of car

(B) Speed of car

(C) Length of car

(D) Number of cars

9. Sydney has a temperature of 35°C when Stockholm had a temperature of -11°C . What is the difference in the temperatures?

(A) 24°C

(B) 34°C

(C) 46°C

(D) 34°C

10. A motor bike travelled 78 kilometres between 10:00 a.m. and 11:30 a.m. What is the average speed?

(A) 31 km/h

(B) 52 km/h

(C) 60 km/h

(D) 117 km/h

11. When a number is doubled and it results in 10. Which equation finds the number?

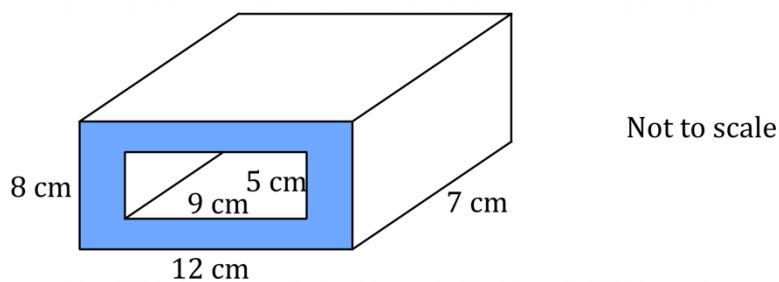
(A) $n = 10 \times 2$

(B) $\frac{n}{2} = 10$

(C) $2 = 10n$

(D) $2n = 10$

12.



What is the volume of concrete in the block shown above?

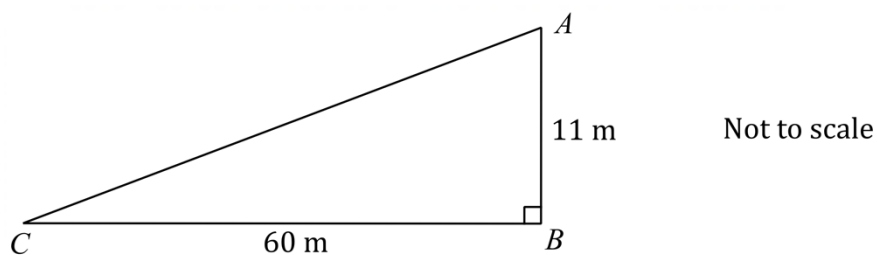
(A) 312 cm^3

(B) 357 cm^3

(C) 476 cm^3

(D) 627 cm^3

13.



What is the length of the hypotenuse in $\triangle ABC$? Answer to the nearest whole number.

(A) 11

(B) 60

(C) 61

(D) 3721

14. Which point will the line $y = 7 - 2x$ not pass through?

(A) (1, 5)

(B) (2, 3)

(C) (5, -3)

(D) (-4, 1)

15. What price will you pay for a shirt marked at \$70.00 if you receive a 20% discount?

- (A) \$35.00
- (B) \$50.00
- (C) \$56.00
- (D) \$65.00

~~16.~~ The frequency table shows the scores in a quiz.

<i>Score</i>	<i>Frequency</i>
12	3
13	4
14	7
15	11
16	3
17	1

What is the mean score in the quiz?

- (A) 10.8
- (B) 12
- (C) 13.24
- (D) 14.34

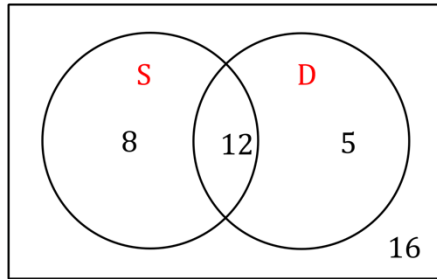
17. Which equation has the solution $x = 4$?

- (A) $3x - 5 = 17$
- (B) $31 - 5x = 11$
- (C) $\frac{x}{2} + 7 = 9$
- (D) $\frac{x + 6}{2} = 7$

~~18.~~ Between which two consecutive numbers does $\sqrt[3]{9}$ lie?

- (A) 0 and 1
- (B) 1 and 2
- (C) 2 and 3
- (D) 3 and 4

19. The Venn diagram below shows the numbers of students taking part in a school play who sing and/or dance.



What is the probability that a student in the play both sings and dances?

- (A) $\frac{8}{41}$
- (B) $\frac{12}{41}$
- (C) $\frac{13}{41}$
- (D) $\frac{25}{41}$
20. Which of the following does *not* equal $\frac{4x}{5}$?

- (A) $\frac{8x}{10}$
- (B) $\frac{x+4}{5}$
- (C) $0.8x$
- (D) $\frac{-4x}{-5}$

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
(a)	What is Jacob's new salary if he previously earned \$675 per week and was given a pay rise of 5%?	1
(b)	The ratio of cars to trucks is 5 :2. If there are 30 trucks, how many cars are there?	1
(c)	What is the solution to $\frac{3p}{2} = 12$?	1
(d)	(i) Find $\frac{5}{8} - 1\frac{3}{5} \times 3\frac{2}{3} - \frac{1}{9}$ giving answer as a mixed numeral.	1
	(ii) Express the answer in part (i) as a decimal rounded to 4 decimal places.	1

Question 22 (5 marks)

Marks

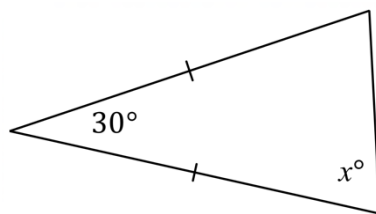
- (a) Expand and simplify $5(m + 3) + 2(m - 3)$.

1

- (b) Florence visits the supermarket to buy rice. She finds a 2 kg bag for \$2.45, 1 kg bag for \$1.30 and a 500 g bag for \$0.97. Which size bag offers the best value for money?

1

- (c)



Not to scale

1

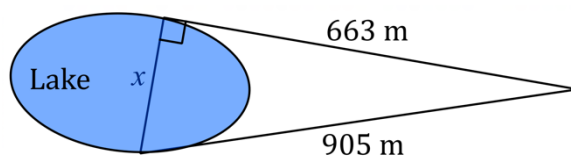
Find the value of x in this isosceles triangle.

~~(d)~~

The probability of winning a lottery is $\frac{1}{100\,000}$.
What is the probability of *not* winning?

1

- (e)



Not to scale

1

What is the distance across the lake?

Question 23 (5 marks)

Marks

(a) Simplify

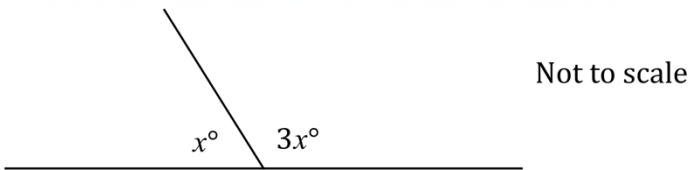
(i) $5m^2n \times 3mn^3$

1

(ii) $16x^4y^9 \div 8y^9$

1

(b)



1

Find the value of x by forming and then solving an equation.

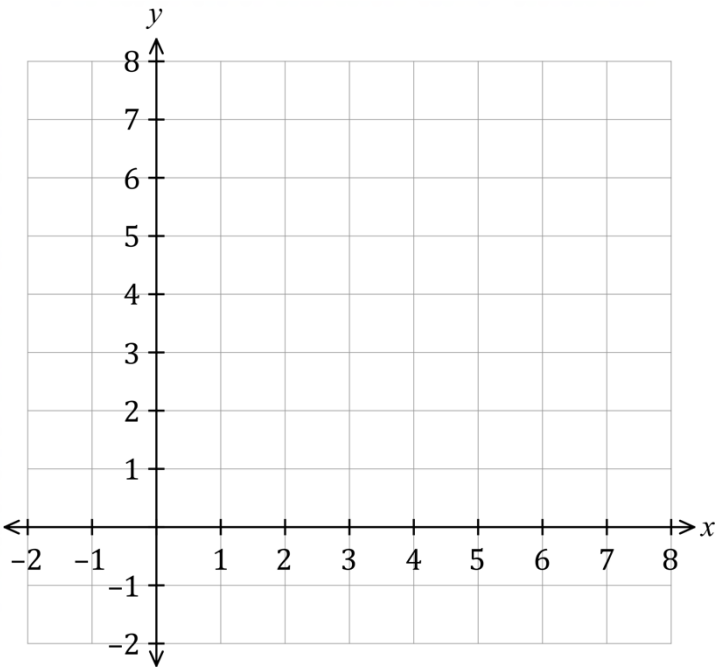
(c) (i) Complete the table of values $y = 2x + 2$

1

x	0	1	2	3
y				

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

1



Question 24 (5 marks)

Marks

~~(a)~~ The scores of 30 students in a mathematics test are shown below.

9	7	10	9	8	5	9	8	6	8
8	8	10	8	7	8	6	7	7	5
10	4	8	7	6	9	8	7	10	7

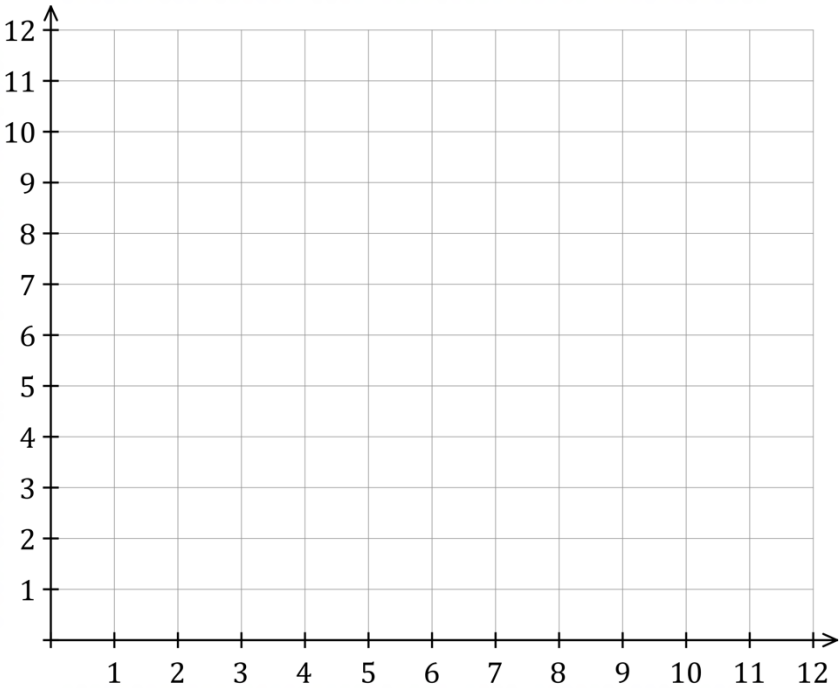
(i) Complete the frequency table. 1

Score	Tally	Frequency

(ii) How many students scored more than 7? 1

(iii) Which score is the mode? 1

(iv) Construct a frequency histogram 1



(b) Where does the line $2x - y + 4 = 0$ cut the y -axis? 1

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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.

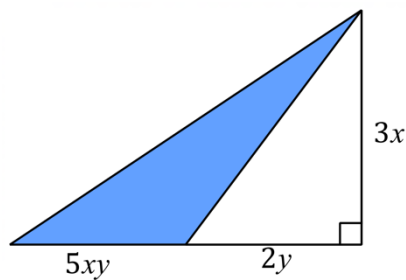
Question 25 (5 marks)

Marks

- ~~(8)~~ Daniel wishes to end the year with a mean mark of at least 90%. He has averaged 88.5% in the four exams this year. What is the lowest mark that Daniel can receive in the final exam if he wishes to reach his goal?

2

(b)



Not to scale

1

Find an expression for the area of the shaded triangle.

- ~~(c)~~ A small class with eight students sat for a test and scored the following marks.
7, 93, 95, 96, 96, 99, 90, 94

2

Anna scored 93. "I did well in the test" Anna told her mother. "I was way above the average". Do you agree with this statement? Explain your answer.

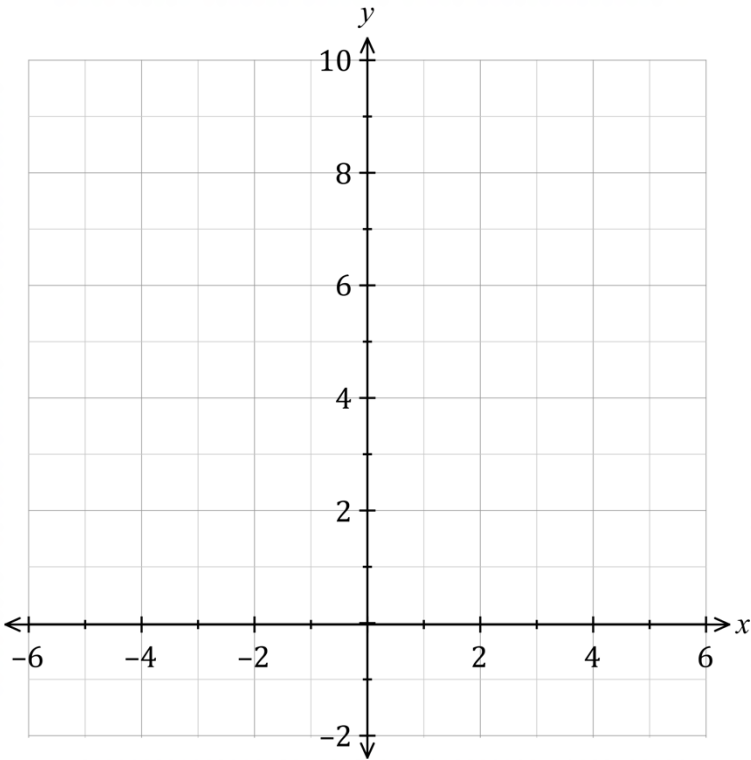
Question 26 (5 marks)

Marks

(a) P is the point $(-3, 6)$ and Q is $(3, -2)$.

(i) Show the line joining P and Q on the number plane below.

1



(ii) What is the y -intercept?

1

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(iii) What is the equation of PQ ? not in exam but we have covered this

1

.....

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~~(b)~~ Find the value of x given the set of scores has a mean of 7.5

2

Score	Frequency
6	4
7	6
x	6

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End of paper