

Name _____

Date _____

Year 7 MATHEMATICS 2022

Yearly Examination

General Instructions

- Reading time – 5 minutes
- Working time – 70 minutes
- Show all necessary working / units
- Board approved calculators are allowed
- Exam guidelines
 - ✓ Use black pen for your working
 - ✓ Use a pencil and ruler for diagrams
 - ✓ Marks may be lost for poorly organised written work.

Total Marks – 60

Section I – Multiple Choice
(20 marks)

Allow 25 minutes

Section II – Short Response

(40 marks)

Allow 45 minutes

Question	Number	Algebra	Measurement & Geometry	Data and Probability	Total
Section I					/20
3,5,6,8,10,13,15	/7				
7,12,19		/3			
1,2,4,9,11,14,17			/7		
16,18,20				/3	
Section II					/40
21	/10				
22		/10			
23			/10		
24				/10	
	/17	/13	/17	/13	/60

Section I – Multiple Choice (20 marks)

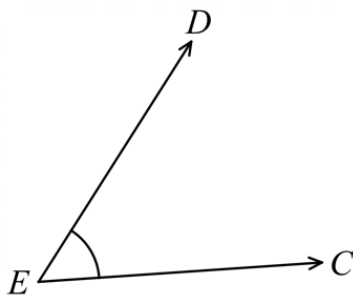
Allow approximately 25 minutes for this section

Attempt Questions 1 to 20

1. Complete the conversion: $5000\text{mm} = \underline{\hspace{1cm}}\text{cm}$

- A. 5000 cm
- B. 500 cm
- C. 50 cm
- D. 5 cm

2. What is the correct name for the angle shown below?



- A. $\angle CDE$
- B. $\angle CED$
- C. $\angle DCE$
- D. $\angle EDC$

3. Which equation below is a true statement?

- A. $7 \times (7 + 3) - 1 = 69$
- B. $(7 \times 7 + 3) - 1 = 69$
- C. $7 \times (7 + 3 - 1) = 69$
- D. $7 \times 7 + (3 - 1) = 69$

4. What is the area of a square with side length of 30cm?

- A. 120cm^2
- B. 300cm^2
- C. 450cm^2
- D. 900cm^2

5. What is the next number in the pattern 1,4, 9,16, ...?

- A. 22
- B. 25
- C. 27
- D. 30

6. What is 20% expressed as a simplified fraction?

- A. $20\frac{1}{5}$
- B. $\frac{1}{20}$
- C. $\frac{1}{5}$
- D. $\frac{2}{100}$

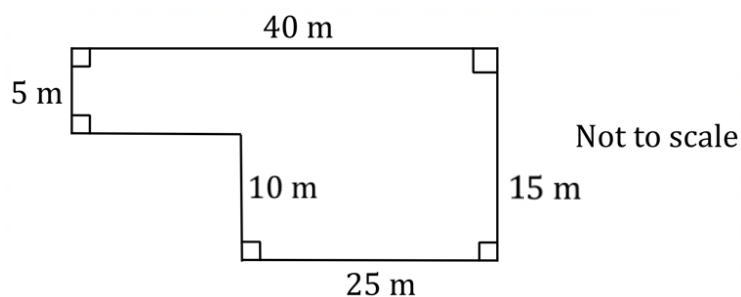
7. Which of the following is a 'like' term of $6x$?

- A. $6x^2$
- B. $2x$
- C. $3 + x$
- D. 6

8. Which of the following is the largest decimal number?

- A. 590.19
- B. 590.119
- C. 590.163
- D. 590.139

9.



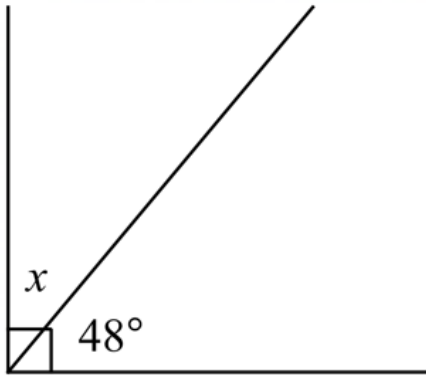
What is the area of this composite shape?

- A. 75m^2
- B. 375m^2
- C. 450m^2
- D. 1000m^2

10. Evaluate $(-13)^2$

- A. -169
- B. -26
- C. 26
- D. 169

11.



Not to scale

What is the value of x ?

- A. 42°
- B. 45°
- C. 48°
- D. 52°

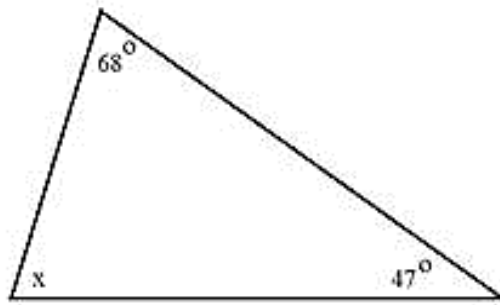
12. $3a + 4b - 3a + 2c$ is the same as:

- A. $15abc$
- B. $6a + 4b + 2c$
- C. $3a^2 + 4b + 2c$
- D. $4b + 2c$

13. Which statement is equivalent to $48.25 \div 5$?

- A. $482.5 \div 500$
- B. $4825 \div 5000$
- C. $4825 \div 500$
- D. $4825 \div 50$

14.



Not to scale

What is the value of x on the triangle shown above?

- A. 65°
- B. 115°
- C. 125°
- D. 180°

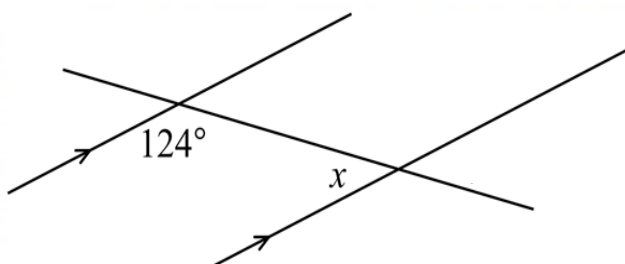
15. Which of these numbers is the largest?

- A. -7
- B. -11
- C. -3
- D. -2

16. What is the probability of rolling a 2 with a fair 6-sided dice?

- A. 6%
- B. 16%
- C. $16\frac{2}{3}\%$
- D. 60%

17. What is the value of x and why?



Not to scale

- A. $x = 124^\circ$, alternate angles on parallel lines
- B. $x = 76^\circ$, corresponding angles on parallel lines
- C. $x = 56^\circ$, co-interior angles on parallel lines
- D. $x = 56^\circ$, complementary angles on parallel lines

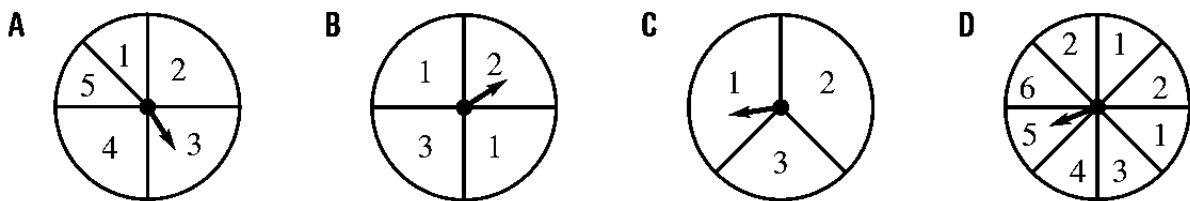
18. What is the mean of the scores 5, 6, 7, 10, 11?

- A. 7.7
- B. 7.8
- C. 7.9
- D. 8.0

19. Scott thinks of a number " n ". If he doubles his number then multiplies it by 5, the result is 30. What equation represents this information?

- A. $10n = 30$
- B. $5n + 2 = 30$
- C. $2n + 5 = 30$
- D. $2(n + 5) = 30$

20. Which of the following spinners has the highest probability of landing on the number 1 in a single spin?



- A. Spinner A
- B. Spinner B
- C. Spinner C
- D. Spinner D

Section II – Short Response (40 marks)

Allow approximately 45 minutes for this section

Attempt Questions 21 to 24

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

Question 21 (Number) (10 marks)

- a. What is 0.8547 rounded to 3 decimal places? **1**

- b. 28, 13, ____, -17 **1**

What is the missing number in the pattern shown above?

- c. Apples cost \$4.50 per kilogram. Devon bought 1.4 kg of apples.

- i. What is the cost of Devon's apples? **1**

- ii. Calculate Devon's change if he pays for the apples with a \$10 note. **1**

- d. Logan caught 25 fish, but 2 out of every 5 were too small to take home.

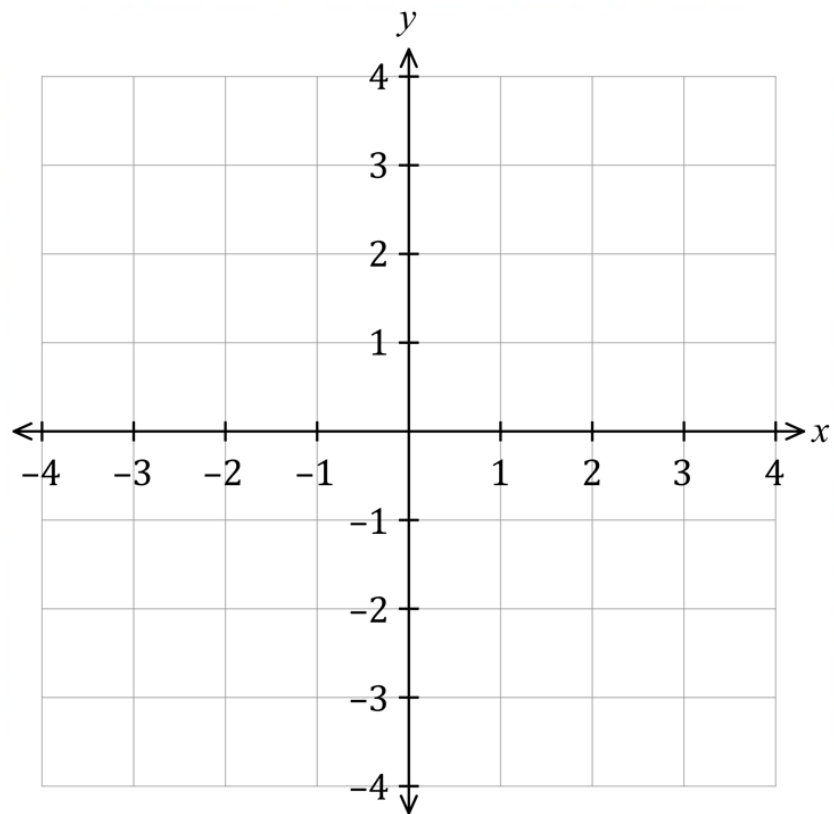
- i. What percentage of fish were too small? **1**

- ii. Therefore, how many fish could he take home? **1**

- e. At a clearance sale, a jacket that normally costs \$120 has a 20% discount sticker attached to it. Calculate the new discounted price. **2**

- f. Plot and label the following four points on the number plane below. You do not need to connect the points. **2**

$A(-2, 1)$, $B(2, 3)$, $C(3, -1)$, $D(-1, -1)$



Question 22 (Algebra) (10 marks)

- a. What is the result when $3x$ is subtracted from x ? **1**

- b. Solve the following equations.

- i. $y - 4 = 7$ **1**

- ii. $3x = 12$ **1**

- c. Expand $5(3x + 4) + x$ **2**

- d. Solve the following equations.

- i. $\frac{p+4}{3} = 10$ **2**

- ii. $2(y + 6) = 17$ **2**

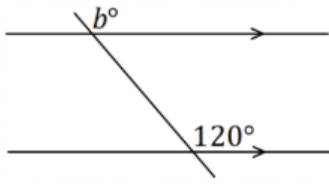
- e. To convert between temperatures in Celsius and Fahrenheit, the rule is: **1**

$F = \frac{9C}{5} + 32$. Calculate the value of F if $C = 24$.

Question 23 (Measurement) (10 marks)

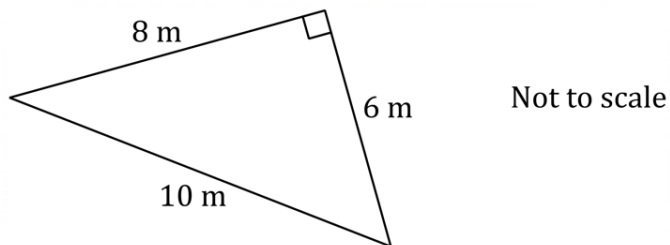
- a. Find the value of b , stating the reason for your answer.

2



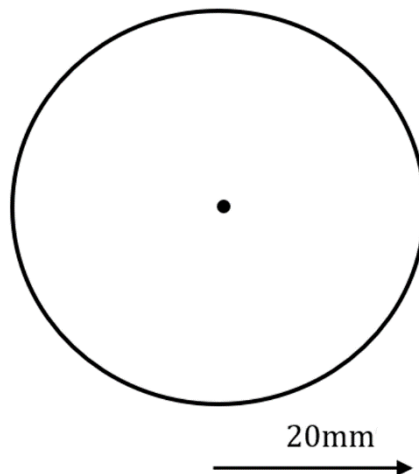
- b.

1



- c. What is the area of the above triangle?

- d.



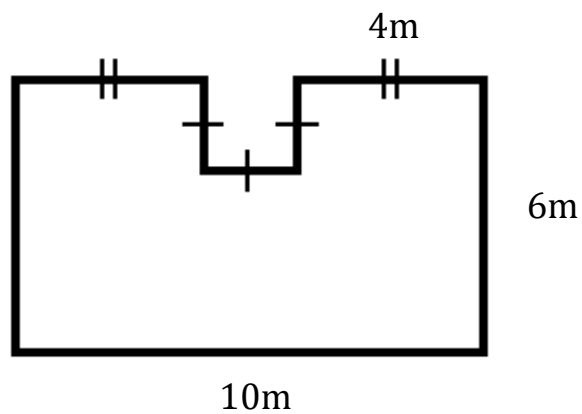
A circle has a radius of 20mm. Find its circumference, correct to the nearest millimetre.

1

- e. What is the area of a rectangle that is 1.65m long and 85cm wide, correct to two decimal places?

2

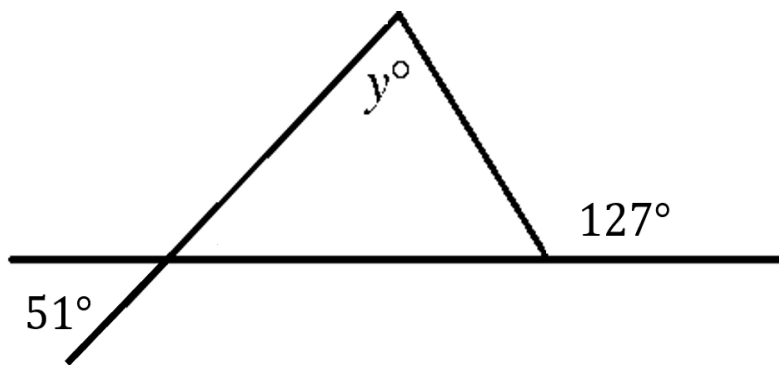
- f. John makes a floor plan of his room, as shown below.



What is the perimeter of his room?

2

g. Consider the diagram below.

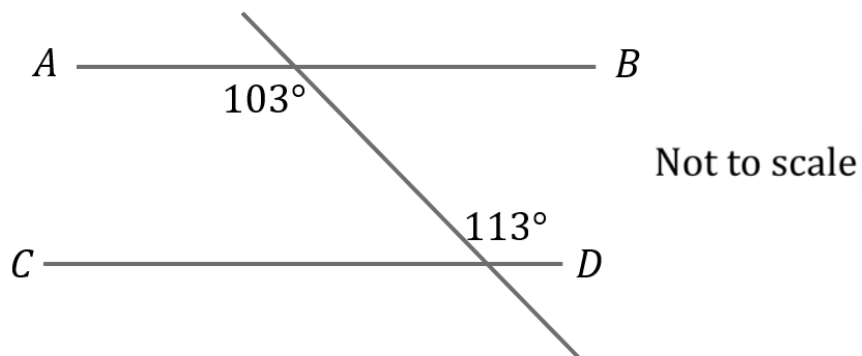


Find the value of y° .

1

h. Explain why AB is not parallel to CD.

1



Question 24 (Data and Probability) (10 marks)

- a. When a coin is tossed, what is the probability of getting a tail? Write your answer as a percentage. **1**

- b. How many times would you expect to get a 4 if a die is rolled 48 times? **1**

- c. In a class of 15 students, the number of hours in a week that they spend playing sports recorded. The results are as follows:

2, 3, 0, 1, 6, 4, 2, 1, 3, 1, 7, 6, 6, 1, 2

- i. Find the median number of hours. **1**

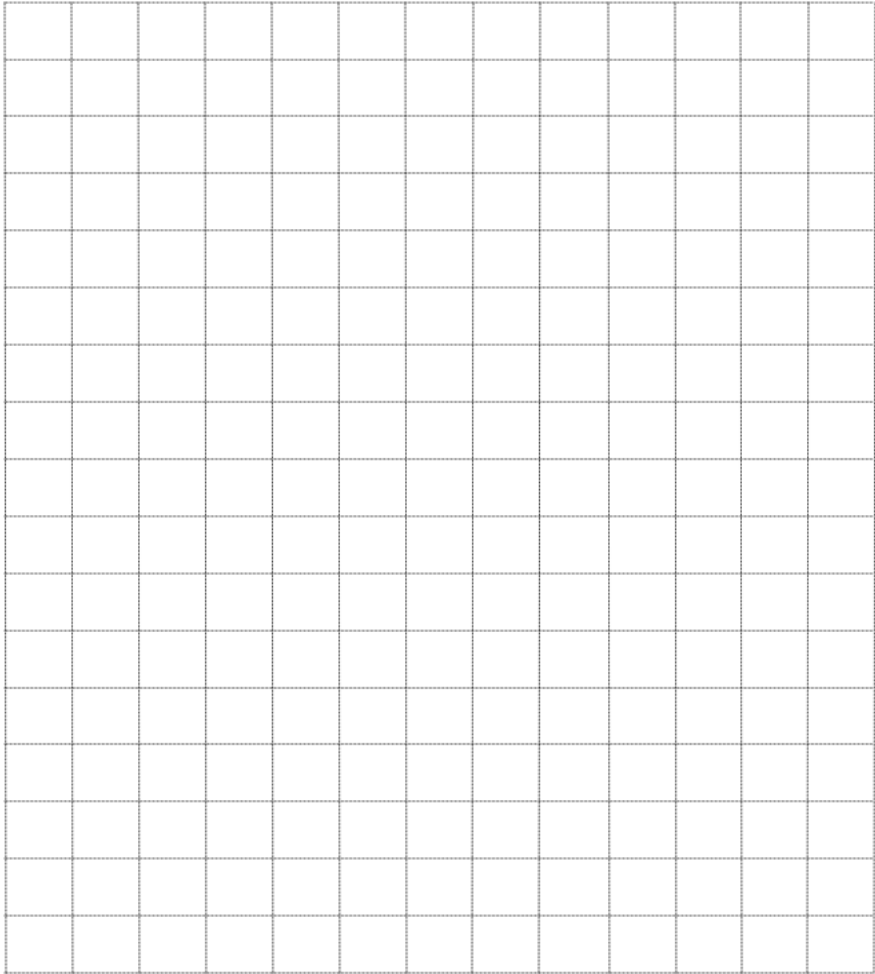
- ii. What is the mean? **1**

- iii. What is the range? **1**

- d. At the spring fair, a survey was conducted to determine which attraction was the most enjoyable. The results were recorded as shown below:

The Dropper	Fairy Floss	Petting Zoo	Woodchopping	Bumper Cars	Ferris Wheel
11	9	3	5	14	8

- i. How many people were surveyed? **1**
-
-
- ii. What was the most popular attraction? **1**
-
-
- iii. What is the probability that a randomly selected student enjoyed “*The Dropper*” the most? **1**
-
-
- iv. Create a **column graph** below to show the information in the table above. **2**



Indices

$$a^m \times a^n = a^{m+n}$$

$$a^m \div a^n = a^{m-n}$$

$$(a^m)^n = a^{m \times n}$$

$$a^0 = 1$$

Linear Relationships

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\text{Gradient} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\text{Gradient} = \frac{\text{Rise}}{\text{Run}}$$

Measurement & Geometry

$$\text{Volume} = \text{Area} \times \text{length}$$

$$\text{Area of a parallelogram} = b \times h$$

$$\text{Area of a circle} = \pi r^2$$

$$\text{Area of a sector} = \frac{\theta}{360} \times \pi r^2$$

$$\text{Circumference of a circle} = 2\pi r \text{ or } \pi d$$

$$\text{Pythagoras' Theorem: } a^2 + b^2 = c^2$$

Angles

$$\text{Sum of interior angles} = (n - 2) \times 180$$

Data Analysis

Mean: average

Median: middle

Mode: most

Range: highest – lowest

Probability

$$P(\text{event}) = \frac{\text{number of favourable outcomes}}{\text{total number of outcomes}}$$