



EQAO Grade 9

PDF Sample Test

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Exam & Increase Your Chances of Scoring High**



* The correct answers and explanations are located at the end of this PDF.

Practice Questions

Strand 1 – Number

Question #1

Consider the following numbers:

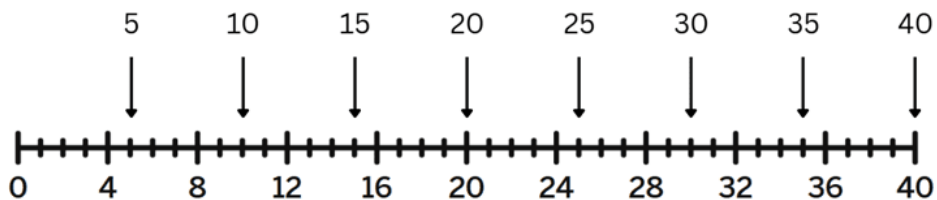
$$-2, \frac{5}{6}, 7.25, \sqrt{9}, -0.4$$

Which TWO number sets include all of these values?

- A. integers
- B. irrational numbers
- C. rational numbers
- D. real numbers

Question #2

On the number line from 0 to 40, the arrows represent the multiples of 5:



Which statement best describes how the density of the positive integers between 0 and 40 compares to the density of the multiples of 5?

- A. Both sets have the same density.
- B. Both sets have the same density and contain infinitely many numbers.
- C. The positive integers are more densely packed than the multiples of 5.
- D. The positive integers are less densely packed than the multiples of 5.



Question #3

Simplify this expression:

$$\frac{35m^4n^5}{7m^2n^3}$$

- A.** $5m^2n^2$
- B.** $5m^2n^8$
- C.** $5m^6n^2$
- D.** $28m^2n^2$

Question #4

What is the value of this expression in scientific notation?

$$\frac{2^6 \times 2^3 \times 2^{-4}}{2^3 \times 2^{-1}}$$

- A.** 2^3
- B.** 2×10^2
- C.** 8×10^0
- D.** 2×10^1

Question #5

Find the value of this expression:

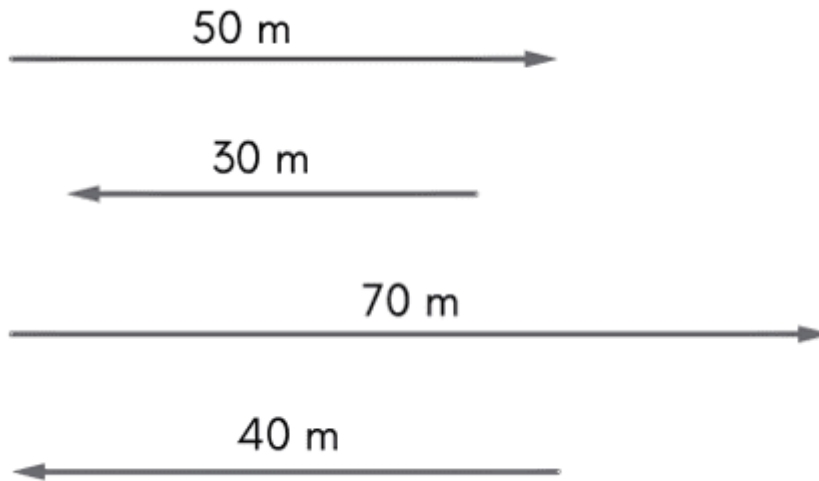
$$2\frac{1}{2} + 3\frac{3}{5}$$

- A.** $5\frac{4}{7}$
- B.** $6\frac{1}{10}$
- C.** $5\frac{11}{10}$
- D.** $6\frac{3}{10}$



Question #6

These arrows represent a student's movement along a straight path:



At the final position, where is the student relative to the starting point?

The student is _____ relative to the starting point.

- A. 10 m to the right
- B. 50 m to the left
- C. 50 m to the right
- D. 150 m to the right

Strand 2. Algebra

Question #7

Liam earns money based on the number of wooden frames (n) he makes. His earnings, P (in dollars), are given by:

$$P = 18.75n + 20$$

How much will Liam earn if he makes 6 frames?

- A. \$112.50
- B. \$132.50
- C. \$125.00
- D. \$137.50



Question #8

Drag and drop the correct expressions to complete each equation.

$x^2 - 5x$ $3x - 2$ $x - 5$ $3x - 6$ $x^2 - 2x$

= $x(x - 5)$

= $3(x - 2)$

Question #9

This pseudocode calculates the perimeter of a rectangle:

- store user input as width
- store user input as length
- perimeter = $2 \times \text{width} + 2 \times \text{length}$

Complete the statement:

If a user inputs width = 10 and _____ as the length, the output will be 50 cm.

- A. 5
- B. 10
- C. 15
- D. 20

Question #10

A student is writing code to calculate the sale price of an item before tax.

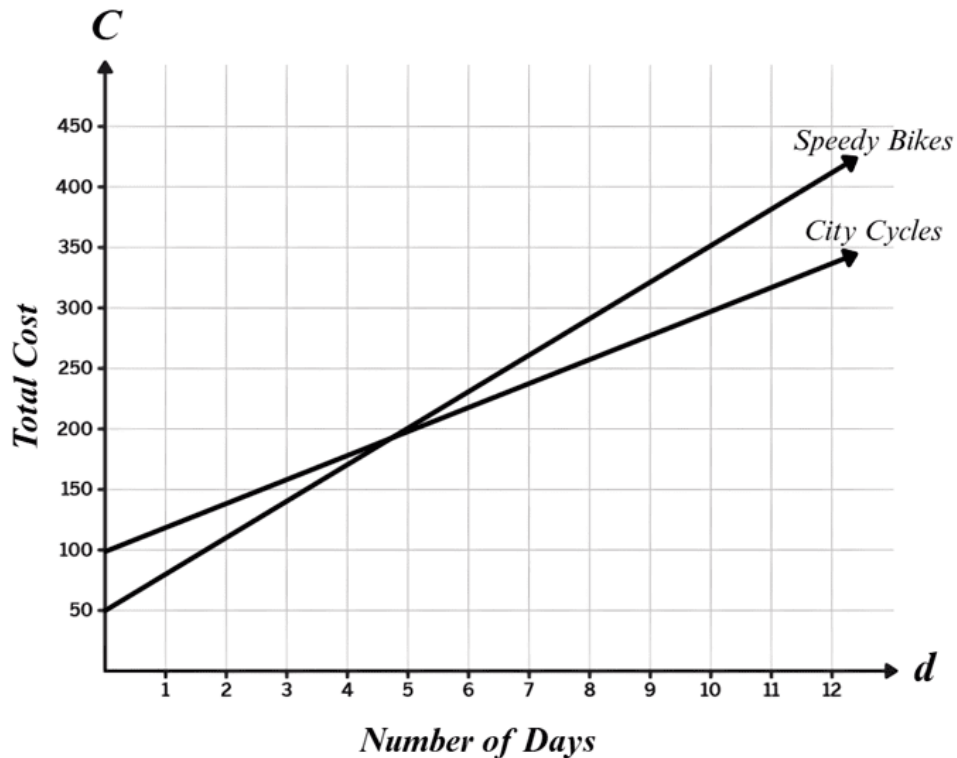
- itemPrice represents the original price
- discountRate represents the discount in percent

Which line of code correctly calculates the sale price (after discount)?

- A. $\text{salePrice} = \text{itemPrice} * (\text{discountRate}/100)$
- B. $\text{salePrice} = \text{itemPrice} - (\text{discountRate}/100)$
- C. $\text{salePrice} = \text{itemPrice} - (\text{itemPrice} * \text{discountRate}/100)$
- D. $\text{salePrice} = \text{itemPrice} + (\text{itemPrice} * \text{discountRate}/100)$

Question #11

A graph shows the relationship between the total cost of renting a bike and the number of days it is rented from two companies: Speedy Bikes and City Cycles.



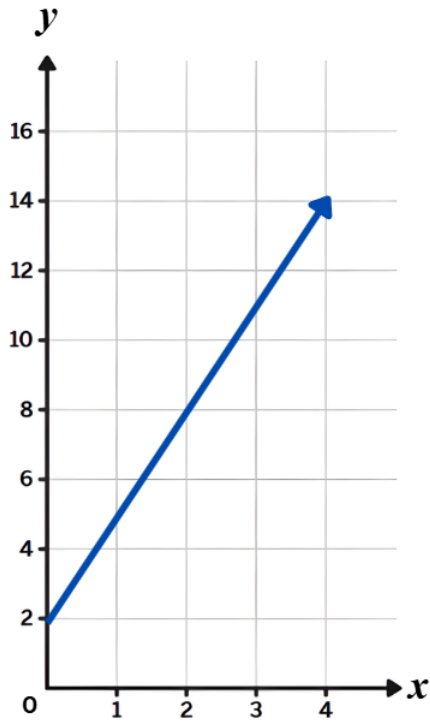
Which statement is true?

- A. The initial cost at City Cycles is \$50 less than at Speedy Bikes.
- B. A 4-day rental costs \$200 at both Speedy Bikes and City Cycles.
- C. A rental for more than 5 days costs less at City Cycles than at Speedy Bikes.
- D. The difference in cost between Speedy Bikes and City Cycles for a 10-day rental is \$100.

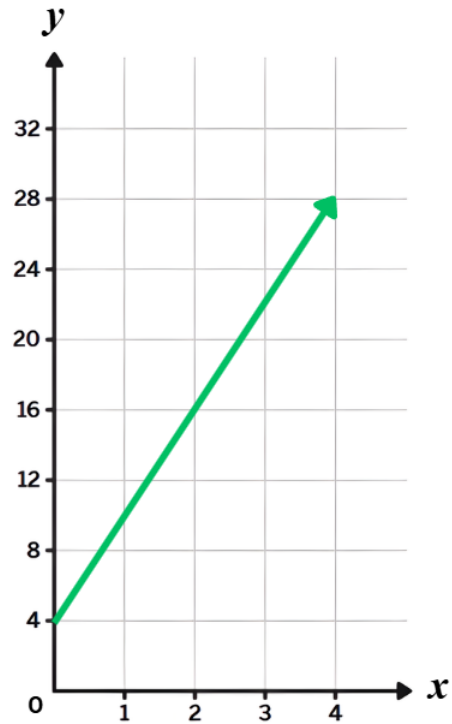
Question #12

Two linear graphs are shown:

Graph A



Graph B



Complete the statement:

The rate of change of Graph _____ is _____ times greater than that of the other graph.

A

B

2

3

4

5



Question #13

Three of the following represent linear relationships.

Which one is non-linear?

A	$y = 5x - 1$										
B	<table border="1"><thead><tr><th>x</th><th>y</th></tr></thead><tbody><tr><td>0</td><td>3</td></tr><tr><td>1</td><td>6</td></tr><tr><td>2</td><td>9</td></tr><tr><td>3</td><td>12</td></tr></tbody></table>	x	y	0	3	1	6	2	9	3	12
x	y										
0	3										
1	6										
2	9										
3	12										
C	<table border="1"><thead><tr><th>x</th><th>y</th></tr></thead><tbody><tr><td>0</td><td>2</td></tr><tr><td>1</td><td>3</td></tr><tr><td>2</td><td>6</td></tr><tr><td>3</td><td>11</td></tr></tbody></table>	x	y	0	2	1	3	2	6	3	11
x	y										
0	2										
1	3										
2	6										
3	11										
D	$y = 4 - x$										

Question #14

A line is represented by:

$$y = 3x + 1$$

The slope doubles, and the y-intercept decreases by 4.

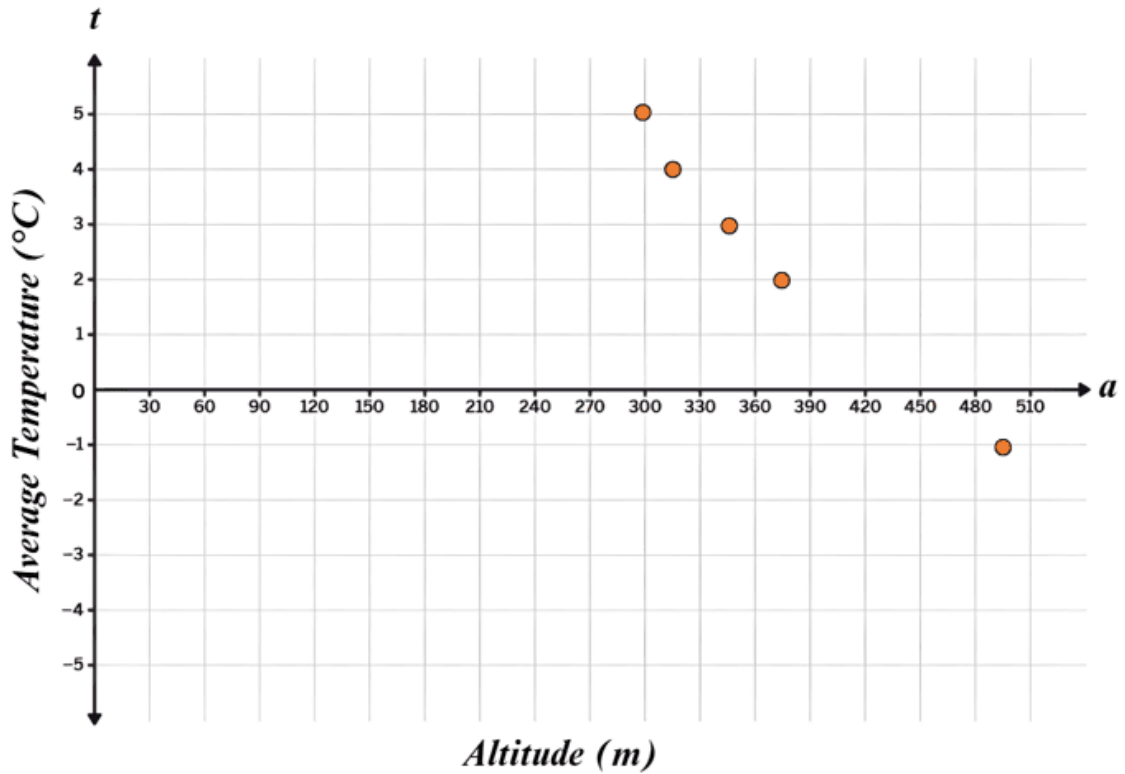
What is the new equation?

- A. $y = 6x - 3$
- B. $y = 6x + 5$
- C. $y = 3x - 3$
- D. $y = 6x - 4$

Strand 3 - Data

Question #15

A scatter plot shows the relationship between average temperature ($^{\circ}\text{C}$) and altitude (m) for several cities.



The data for four more cities is shown below:

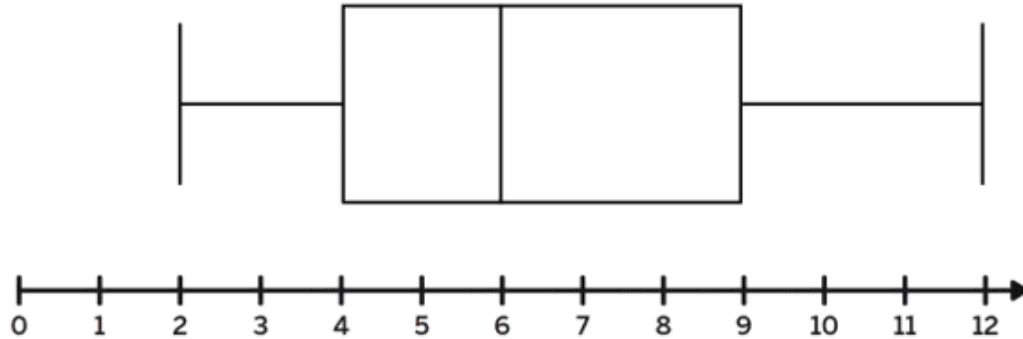
City	Altitude (m)	Average Temperature ($^{\circ}\text{C}$)
City A	390	-1
City B	420	1
City C	450	0
City D	480	-0.5

Which city would be an outlier if added to the graph?

- A. City A
- B. City B
- C. City C
- D. City D

Question #16

A box plot shows the number of hours students spend on their phones per day.

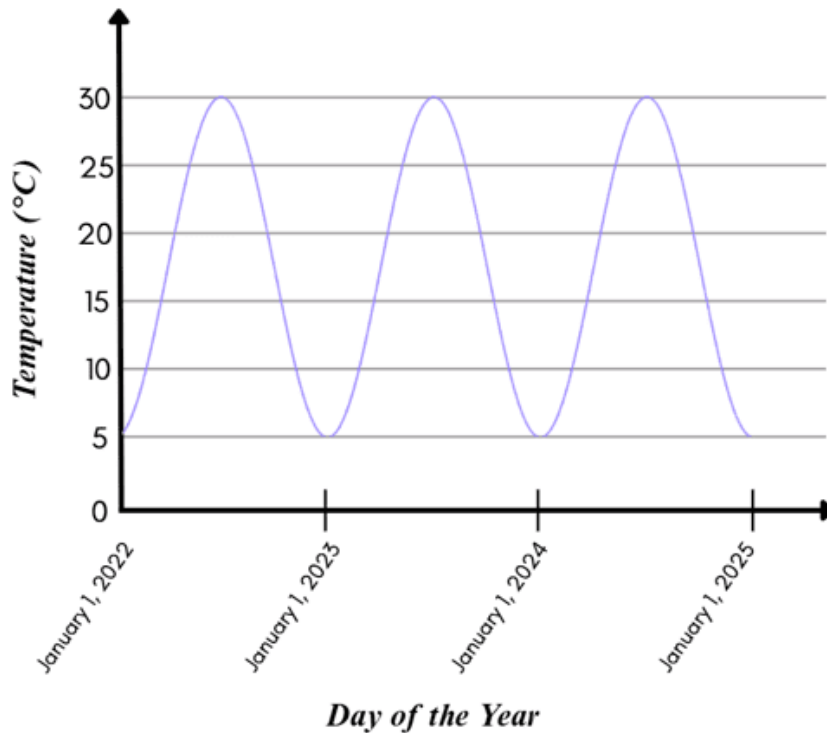


Select the TWO data sets that match this box plot.

- A: 2, 4, 6, 9, 12
- B: 2, 4, 4, 6, 9, 9, 12
- C: 2, 4, 5, 6, 7, 9, 12
- D: 2, 3, 4, 6, 6, 9, 12

Question #17

The graph shows the average temperature ($^{\circ}\text{C}$) over 3 years.



What is the maximum temperature expected in the year 2026 based on this data?

- A. 10°C
- B: 15°C
- C: 20°C
- D: 30°C

Question #18

A growing pattern uses square tiles to make a border.

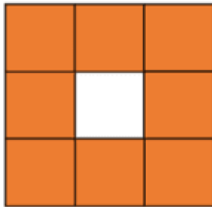


Figure 1

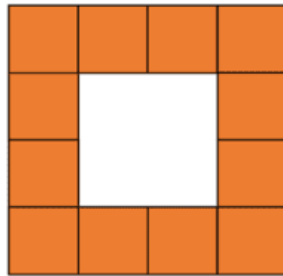


Figure 2

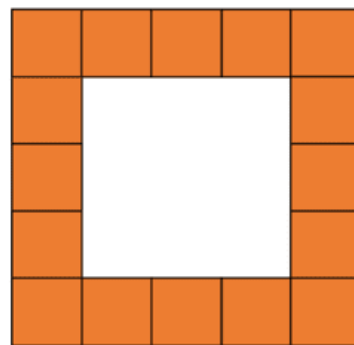


Figure 3

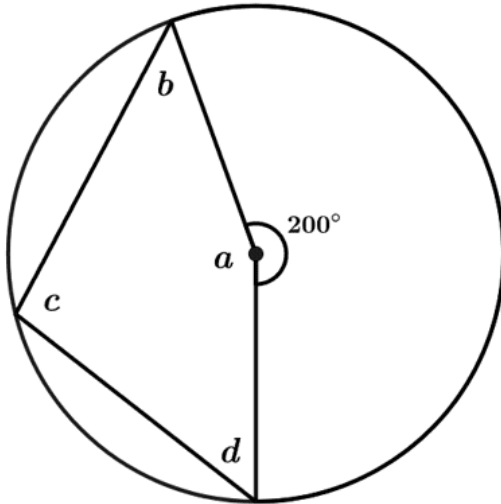
Which strategy is the quickest way to find the number of tiles in Figure 1000?

- A. Making a graph
- B: Extending a table
- C: Drawing all figures
- D: Writing a rule or equation

Strand 4 – Geometry and Measurement

Question #19

Which variable represents an angle that measures 160° ?



- A. a
- B. b
- C. c
- D. d

Question #20

In a city, each block measures $\frac{1}{10}$ of a mile.

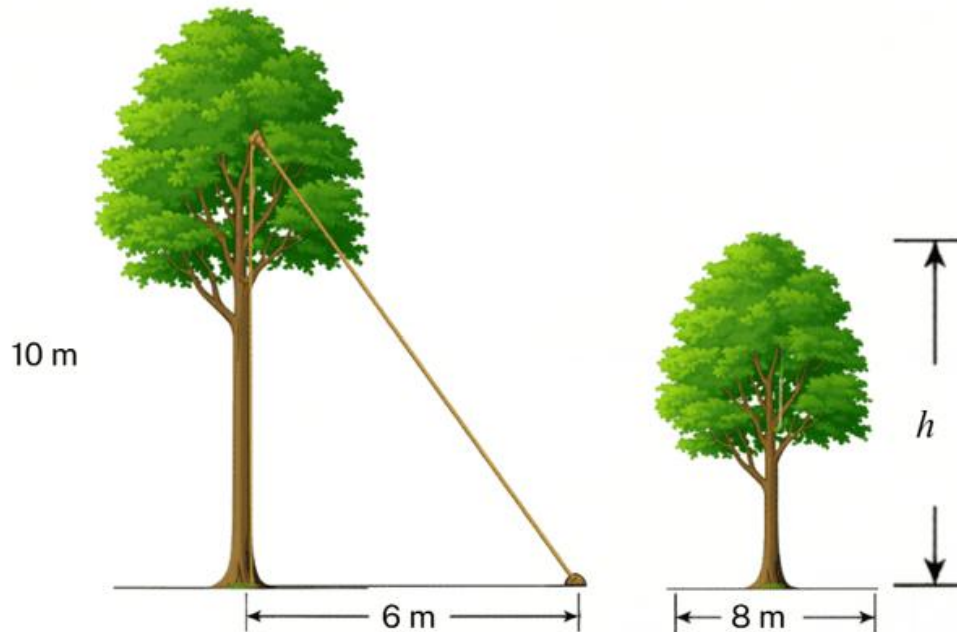
Estimate the distance, in meters, if a person travels 4 blocks.

Hint: 1 mile = 1609.3 m

- A. 322 m
- B. 644 m
- C. 804 m
- D. 1609 m

Question #21

A rope is tied from the ground to the top of a tree. The same rope is then used to reach another tree without moving its base on the ground.



Find the exact height, h , of the second tree.

- A. $\sqrt{64} m$
- B. $\sqrt{72} m$
- C. $\sqrt{136} m$
- D. $\sqrt{165} m$

Strand 5 – Financial Literacy

Question #22

Select the TWO options that could best help a person avoid debt.

- A. $\sqrt{64} m$
- B. $\sqrt{72} m$
- C. $\sqrt{136} m$
- D. $\sqrt{165} m$



Question #23

Noah wants to buy a bike for \$800.

Option A: 25% down payment and \$30/month for 2 years

Option B: \$0 down payment and \$22/month for 3 years

Which statement is correct?

- A. Option A costs \$64 less than Option B.
- B. Option B costs \$64 less than Option A.
- C. Option A costs \$128 less than Option B.
- D. Option B costs \$128 less than Option A.

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Correct Answers & Explanations

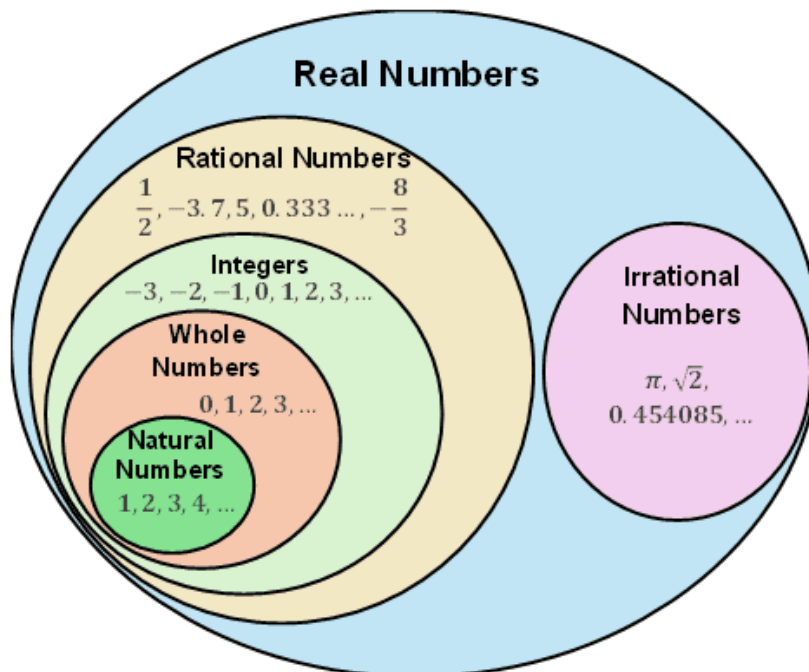
Question #1

Correct answer: C & D

Explanation:

Numbers are either rational or irrational. Rational numbers include counting/natural numbers, whole numbers, integers, fractions, and decimals that end or repeat.

Remember the Real Number System:



- Natural Numbers → counting numbers
- Whole Numbers → natural numbers + 0
- Integers → whole numbers + negatives
- Rational Numbers → can be written as fractions
- Irrational Numbers → cannot be written as fractions
- Real Numbers → All of the above



Classify each number:

Number	Simplified Form	Integer	Rational	Irrational	Real
-2	-2	✓ Yes	✓ Yes	✗ No	✓ Yes
$\frac{5}{6}$	$\frac{5}{6}$	✗ No	✓ Yes	✗ No	✓ Yes
7.25	7.25	✗ No	✓ Yes	✗ No	✓ Yes
$\sqrt{9}$	3	✓ Yes	✓ Yes	✗ No	✓ Yes
-0.4	-0.4	✗ No	✓ Yes	✗ No	✓ Yes

- All numbers are RATIONAL (can be written as fractions)
- All numbers are REAL (they exist on the number line)
- Not all are integers
- None are irrational

Thus, Options C and D are correct.

These values are sets of rational and real numbers.

Question #2

Correct answer: C

Explanation:

We are comparing two sets between 0 and 40:

Positive integers → 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, ..., 40

Multiples of 5 → 5, 10, 15, 20, 25, 30, 35, 40

Density means how closely packed the numbers are on the number line.

- More numbers in the same space → more dense
- Fewer numbers → less dense

From 0 to 40, there are 40 positive integers, but only 8 numbers that are multiples of 5, so the integers are more numerous in the same space.



So, the set of positive integers is more dense than the set of multiples of 5.

Question #3

Correct answer: B

Explanation:

Divide the numbers (coefficients):

$$\frac{35m^4n^5}{7m^2n^3} = \frac{5m^4n^5}{m^2n^3}$$

Divide terms that have the same variable. When dividing variables, subtract the exponents and keep the base (the variable):

$$\frac{5m^4n^5}{m^2n^3} = \frac{5m^2n^5}{n^3}$$

$$\frac{5m^2n^5}{n^3} = 5m^2n^2$$

The simplified form of

$$\frac{35m^4n^5}{7m^2n^3} \text{ is } 5m^2n^2$$

Question #4

Correct answer: C.

Explanation:

When multiplying with the same base, copy the base then add the exponents:

$$\frac{2^6 \times 2^3 \times 2^{-4}}{2^3 \times 2^{-1}} = \frac{2^{6+3+(-4)}}{2^{3+(-1)}} = \frac{2^5}{2^2}$$

When dividing with the same base, subtract the exponents and keep the base:



$$\frac{2^5}{2^2} = 2^{5-2} = 2^3$$

Simplify:

$$2^3 = 2 \times 2 \times 2 = 8$$

Write in scientific notation:

Scientific notation is a way of writing very large or very small numbers in a shorter and easier form.

It looks like this:

$$a \times 10^n$$

Where **a** must be at least 1 but less than 10.

8 is between 1 and 10. So, $a = 8$.

Recall that any number raised to 0 is always equal to 1.

So,

$$10^0 = 1$$

Thus, we can write 8 as 8×10^0 .

Question #5

Correct answer: B

Explanation:

Add the whole numbers:

$$2\frac{1}{2} + 3\frac{3}{5} \rightarrow 2 + 3 = 5$$

Add the fractions:

We need a common denominator for



$$\frac{1}{2} \text{ and } \frac{3}{5}$$

The least common denominator (LCD) of 2 and 5 is 10.

Convert each fraction so they have a common denominator of 10.

To do this, multiply both the numerator and the denominator by the same number.

For $\frac{1}{2}$ multiply both the denominator by 5 to get $\frac{5}{10}$

$$\frac{1}{2} = \frac{5}{10}$$

For $\frac{3}{5}$, multiply both the numerator and denominator by 2 to get $\frac{6}{10}$:

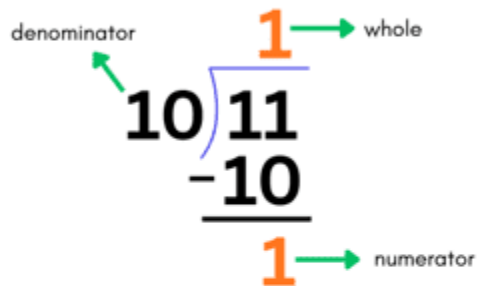
$$\frac{3}{5} = \frac{6}{10}$$

Now add the fractions:

$$\frac{5}{10} + \frac{6}{10} = \frac{5+6}{10} = \frac{11}{10}$$

Convert improper fraction to mixed number:

$$\frac{11}{10} = 1 \frac{1}{10}$$



Combine everything:

$$5 + 1 \frac{1}{10} = 6 \frac{1}{10}$$

$$\text{Thus, } 2 \frac{1}{2} + 3 \frac{3}{5} = 6 \frac{1}{10}.$$

Question #6

Correct Answer: C

Explanation:

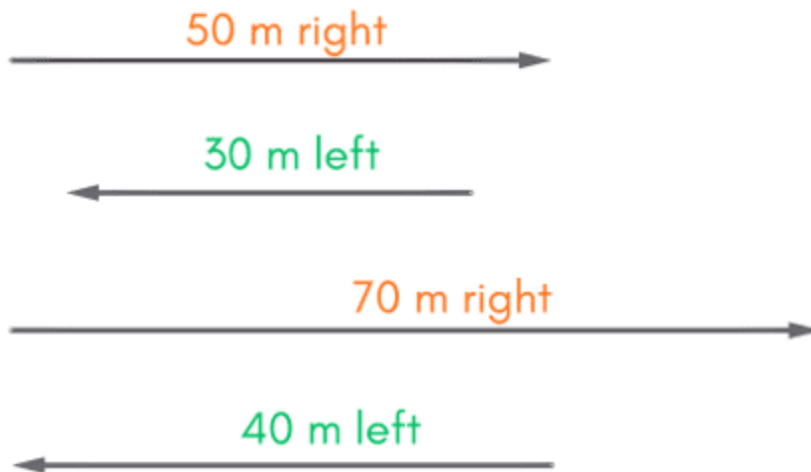
Think of it like a number line:

Moving right → forward (+)

Moving left → backward (-)

The final position depends on which direction has more total distance.

Look at the given movements:



It means:

$$+50 + (-30) + 70 + (-40)$$

$$= 50 - 30 + 70 - 40$$

$$= 20 + 70 - 40$$

$$= 90 - 40$$

$$= 50$$

The final result is +50. Positive means to the right.

So, the student is **50 m to the right** relative to the starting point.

Question #7

Correct answer: B

Explanation:

Understand the equation:

$$P = 18.75n + 20$$

$18.75n$ → money earned per frame

+20 → extra fixed payment

Since Liam made 6 frames, replace $n = 6$:



$$P = 18.75n + 20$$
$$P = 18.75(6) + 20$$

Solve:

$$P = 18.75(6) + 20$$
$$P = 112.50 + 20$$
$$P = 132.50$$

So, if Liam makes 6 frames, he will earn a total of **\$132.50**.

Question #8

Correct answer:

$$x^2 - 5x = x(x - 5)$$

$$3x - 6 = 3(x - 2)$$

Explanation:

Use the distributive property to expand each expression:

$$x(x - 5) = x(x) + x(-5) = x^2 - 5x$$

$$3(x - 2) = 3(x) + 3(-2) = 3x - 6$$

Question #9

The correct answer is: C

Explanation:

Use the formula:

$$\text{perimeter} = 2 \times \text{width} + 2 \times \text{length}$$

Let W = width; L = length

Substitute width = 10, and the output (perimeter) = 50:

$$50 = 2(10) + 2L$$



Solve the length:

$$50 = 20 + 2L$$

$$30 = 2L$$

$$15 = L$$

Complete statement: If a user inputs width = 10 and 15 as the length, the output will be 50 cm.

Question #10

Correct Answer: C

Explanation:

We need to find the correct code to calculate the sale price after a discount.

Understand the variables:

itemPrice → original price of the item

discountRate → percent discount (like 20%, 30%, etc.)

To get the sale price, subtract the discount from the original price (itemPrice):

$$\text{Discount} = \text{itemPrice} * \text{discountRate}/100$$

$$\text{salePrice} = \text{itemPrice} - \text{discount}$$

$$\text{salePrice} = \text{itemPrice} - (\text{itemPrice} * \text{discountRate}/100)$$

Question #11

Correct Answer: C.

Explanation:

There are two companies:

- Speedy Bikes
- City Cycles



We compare how much they charge as the number of days increases.

After 5 days:

- Speedy Bikes line is steeper → gets expensive faster
- City Cycles line is less steep → increases slowly

So, City Cycles becomes cheaper after 5 days.

Thus, option C is correct.

Look at the starting/initial cost:

At day 0:

Speedy Bikes = \$50

City Cycles = \$100

Speedy Bikes is cheaper at the beginning.

City Cycles is more expensive at first.

The initial cost at City Cycles is \$50 more than at Speedy Bikes.

So, option A is false.

The lines meet at about 5 days which costs \$200.

This means both companies cost the same at 5 days.

Option B says 4 days, so it is false.

At 10 days:

Speedy Bikes ≈ \$350

City Cycles ≈ \$300

Difference: $\$350 - \$300 = \$50$

Option D says, the difference in cost between Speedy Bikes and City Cycles for a 10-day rental is \$100.

So, option D is also false.

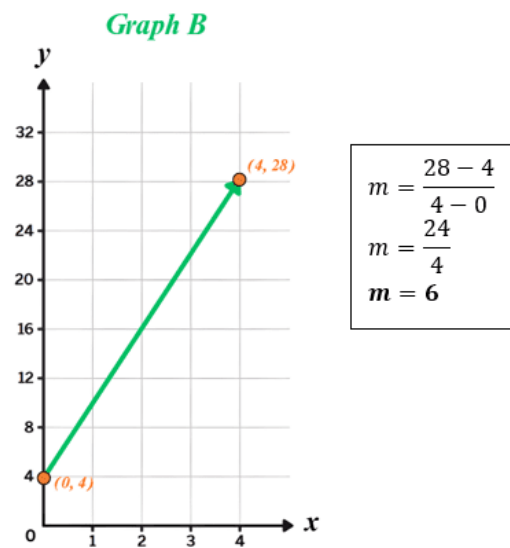
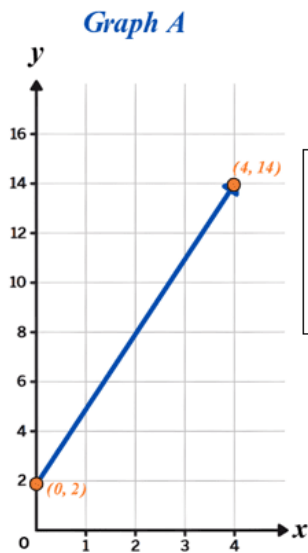
Question #12

Correct Answer: The rate of change of Graph B is 2 times greater than that of the other graph

Explanation

Find slope (rate of change):

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



Compare their slopes:

The rate of change (slope) of Graph B is 2 times greater than that of the other graph.

Question #13

The correct answer is: C

Explanation:

We need to find which relationship is non-linear.

- Linear = same change every time



- Non-linear = change is not the same

Option A: $y = 5x - 1$

This is already in the form: $y = mx + b$

This is a linear equation.

Option B:

x	y
0	3
1	6
2	9
3	12

Look at the changes in y :

$$3 \rightarrow 6 = +3$$

$$6 \rightarrow 9 = +3$$

$$9 \rightarrow 12 = +3$$

Same difference (+3)

This also shows a linear relationship.

Option C:

x	y
0	2
1	3
2	6
3	11

Look at the changes in y :



$$2 \rightarrow 3 = +1$$

$$3 \rightarrow 6 = +3$$

$$6 \rightarrow 11 = +5$$

The change is NOT the same.

This shows a non-linear relationship.

Option D: $y = 4 - x$

Can be written as: $y = -x + 4$

This is a linear equation.

Question #14

Correct Answer: A

Explanation

The equation is in the form $y = mx + b$, where m is the slope and b is the y -intercept.

$$y = 3x + 1$$

$$m = 3 \text{ (slope)}$$

$$b = 1 \text{ (y-intercept)}$$

The slope doubles:

$$y = 3x + 1 \rightarrow y = 6x + 1$$

The y -intercept decreases by 4:

$$1 - 4 = -3$$

$$y = 6x + 1 \rightarrow y = 6x - 3$$

The new equation is $y = 6x - 3$.

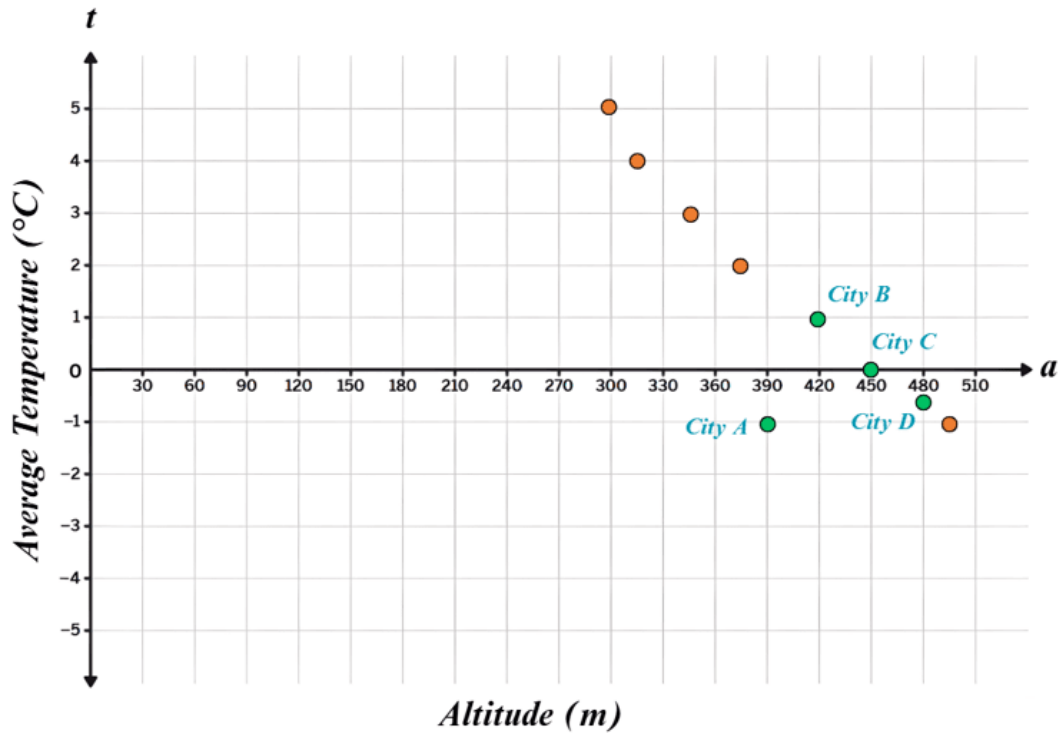
Question #15

Correct Answer: A.

Explanation

The graph shows as altitude increases, the temperature decreases. This is a negative trend (going down).

An outlier is a point that does not follow the pattern, and is far away from the other points.



City A: (390, -1)

At altitude 390, temperature should be around 1–2°C, but this is -1°C (too low) which is slightly colder than expected. It does not follow the trend.

Cities B, C, and D show that as altitude increases, temperature decreases, which follows the pattern in the graph.

Question #16

Correct Answer: A & B

Explanation

The box plot shows the following data:

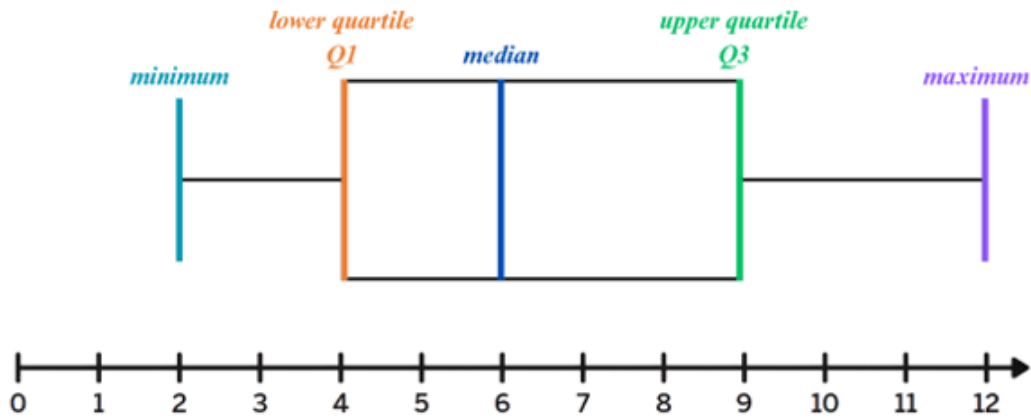
Minimum = 2

Q1 = 4

Median = 6

$Q3 = 9$

Maximum = 12



Option A: 2, 4, 6, 9, 12

Minimum = 2

Median = 6

$Q1 = 4$

$Q3 = 9$

Maximum = 12

Option B: 2, 4, 4, 6, 9, 9, 12

Minimum = 2

Median = 6

$Q1 = 4$

$Q3 = 9$

Maximum = 12

Options A and B match the box plot perfectly.

Option C: 2, 4, 5, 6, 7, 9, 12



Minimum = 2

Median = 6

Q1 = 4.5 (should be 4)

Q3 = 8 (should be 9)

Maximum = 12

Option D: 2, 3, 4, 6, 6, 9, 12

Minimum = 2

Median = 6

Q1 = 3.5 (should be 4)

Q3 = 9

Maximum = 12

Options C and D do not match the box plot.

Question #17

Correct Answer: D. 7

The graph shows temperature over time (years).

It depicts a repeating pattern every year.

Each year, the graph reaches a peak of about 30°C. This is the maximum temperature. Thus in 2026, it is expected to reach a maximum temperature of 30°C.

Question #18

The correct answer is: D

The figures are growing borders made of tiles. Each new figure adds more tiles around the square. The pattern keeps growing.



You need the number of tiles in Figure 1000. That's a very large number.

Making a graph is helpful, but still requires estimating.

Extending a table works for small numbers, but not practical up to 1000.

Drawing all the figures is time consuming, not the quickest way.

Using a rule helps you skip all the steps and go straight to Figure 1000, making it quicker and easier.

Question #19

Correct Answer: A

The angle at the center is 200° . This is a central angle.

A full circle measures 360° .

The remaining angle at the center is:

$$360^\circ - 200^\circ = 160^\circ$$

Angle **a** measures 160° .

Question #20

Correct Answer: B

Each block = $\frac{1}{10}$ of a mile

For 4 blocks:

$$4 \times \frac{1}{10} = \frac{4}{10} = 0.4 \text{ miles}$$

Convert miles to metres:

$$1 \text{ mile} = 1609.3 \text{ m}$$

$$0.4 \times 1609.3 = 643.72 \approx 644 \text{ m}$$

The estimated distance if a person travels 4 blocks is 644 meters.



Question #21

Correct Answer: B

Explanation:

The rope forms a right triangle:

Height of tree = vertical side

Distance from tree = base

Rope = hypotenuse

Same rope = same hypotenuse

Use the Pythagorean Theorem:

$$a^2 + b^2 = c^2$$

For the first tree:

$$10^2 + 6^2 = c^2$$

$$100 + 36 = c^2$$

$$136 = c^2$$

$$\sqrt{136} = \sqrt{c^2}$$

$$\sqrt{136} = c$$

The length of the rope is $\sqrt{136}$ m.

Use the same rope for the second tree:

$$h^2 + 8^2 = (\sqrt{136})^2$$

$$h^2 + 64 = 136$$

$$h^2 = 72$$

$$\sqrt{h^2} = \sqrt{72}$$

$$h = \sqrt{72}$$

The exact height of the second tree is $\sqrt{72}$ m.

Question #22



Correct Answer: A & B

Paying bills on time helps you avoid extra fees and interest.

Saving regularly means you don't need to borrow money.

Borrowing for wants and ignoring interest can increase debt.

Question #23

Correct Answer: D

Option A:

Down payment = 25% of \$800 = $0.25 \times 800 = \$200$

Monthly = \$30/month for 2 years = $30 \times 24 = \$720$

Total = \$920

Option B:

Down payment = \$0

Monthly = \$22/month for 3 years = $22 \times 36 = \$792$

Total = \$792

Compare:

$920 - 792 = \$128$

Thus, Option B costs \$128 less than Option A.

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