

PSSA and Keystone Exams
Summer 2023 Workshops

PSSA, Grade 8 Math

Justin Joins a Gym

Handscoring
Training Set 1

MATHEMATICS

SECTION 2

51. Justin is joining a gym. The gym is currently offering a discount on the fee to join and on the monthly rate.

The discounted price, in dollars, the gym charges can be represented by the equation $y = 10x + 5$.

- A. What are the slope and the y-intercept of the equation? What do the slope and the y-intercept each represent in this situation?

$$\text{slope} = 10x$$

$$\text{y-intercept} = (0, 5)$$

The slope represents the discount, and the y-intercept represents the fee to join, and the monthly rate.

The regular price, in dollars, the gym charges can be represented by the equation $y = 15x + 20$.

- B. How much money, in dollars, does Justin save the first month by joining the gym at the discounted price rather than at the regular price?

$$y = \frac{15x + 20}{15x} = 1.3$$

Justin saves \$1.3 in the first month by joining the gym at the discounted price rather than the regular price.



MATHEMATICS

SECTION 2



51. *Continued.* Please refer to the previous page for task explanation.

Justin creates a system of equations based on the equation from part A and the equation from part B. The solution to the system of equations is $(-3, -25)$.

- C. Why is the point $(-3, -25)$ not a possible solution in this situation?

$(-3, -25)$ is not a possible solution in this situation because he isn't in the negative numbers. He isn't losing money, he is saving.

MATHEMATICS

SECTION 2

51. Justin is joining a gym. The gym is currently offering a discount on the fee to join and on the monthly rate.

The discounted price, in dollars, the gym charges can be represented by the equation $y = 10x + 5$.

$$y = mx + b$$

- A. What are the slope and the y-intercept of the equation? What do the slope and the y-intercept each represent in this situation?

$m = 10$ - represents \$ for monthly fees
 $b = 5$ - represents \$ to join

The regular price, in dollars, the gym charges can be represented by the equation $y = 15x + 20$.

- B. How much money, in dollars, does Justin save the first month by joining the gym at the discounted price rather than at the regular price?

$$\begin{array}{r} y = 10x + 5 \\ y = 15x + 20 \\ \hline 5 \quad 15 \end{array}$$

\$20

MATHEMATICS

SECTION 2

51. *Continued.* Please refer to the previous page for task explanation.

Justin creates a system of equations based on the equation from part A and the equation from part B. The solution to the system of equations is $(-3, -25)$.

- C. Why is the point $(-3, -25)$ not a possible solution in this situation?

the point $(-3, -25)$ isn't
a possible solution
because you have to compare,
not contrast the points, therefore
making it possible.

MATHEMATICS

SECTION 2

51. Justin is joining a gym. The gym is currently offering a discount on the fee to join and on the monthly rate.

The discounted price, in dollars, the gym charges can be represented by the equation $y = 10x + 5$.

- A. What are the slope and the y -intercept of the equation? What do the slope and the y -intercept each represent in this situation?

slope - 10
 y -intercept - 5

The slope represents the monthly rate. The y -intercept represents the fee.

The regular price, in dollars, the gym charges can be represented by the equation $y = 15x + 20$.

- B. How much money, in dollars, does Justin save the first month by joining the gym at the discounted price rather than at the regular price?

Justin saved \$20.

MATHEMATICS

SECTION 2

51. *Continued.* Please refer to the previous page for task explanation.

Justin creates a system of equations based on the equation from part A and the equation from part B. The solution to the system of equations is $(-3, -25)$.

- C. Why is the point $(-3, -25)$ not a possible solution in this situation?

The point $(-3, -25)$ is
not a possible solution because
it would mean that Justin is
getting paid to not go to
the gym which would not happen.

MATHEMATICS

SECTION 2

51. Justin is joining a gym. The gym is currently offering a discount on the fee to join and on the monthly rate.

The discounted price, in dollars, the gym charges can be represented by the equation $y = 10x + 5$.

- A. What are the slope and the y-intercept of the equation? What do the slope and the y-intercept each represent in this situation?

The slope is 5 and the y-intercept is 10.

The regular price, in dollars, the gym charges can be represented by the equation $y = 15x + 20$.

- B. How much money, in dollars, does Justin save the first month by joining the gym at the discounted price rather than at the regular price?

\$25.



MATHEMATICS

SECTION 2



51. *Continued.* Please refer to the previous page for task explanation.

Justin creates a system of equations based on the equation from part A and the equation from part B. The solution to the system of equations is $(-3, -25)$.

- C. Why is the point $(-3, -25)$ not a possible solution in this situation?

The point $(-3, -25)$ is not a possible solution in this situation because you can't have any negative numbers in this situation.

MATHEMATICS

SECTION 2

51. Justin is joining a gym. The gym is currently offering a discount on the fee to join and on the monthly rate.

The discounted price, in dollars, the gym charges can be represented by the equation $y = 10x + 5$.

- A. What are the slope and the y-intercept of the equation? What do the slope and the y-intercept each represent in this situation?

Slope = 10

- The slope is the money in this equation you would pay every month to get in. (Also the amount of months)

y-intercept = 5

- The y-intercept is the money you have left over to go to do other things.

The regular price, in dollars, the gym charges can be represented by the equation $y = 15x + 20$.

- B. How much money, in dollars, does Justin save the first month by joining the gym at the discounted price rather than at the regular price?

For the slope Justin saved \$5.

For the y-intercept Justin saved \$15.



MATHEMATICS

SECTION 2



51. *Continued.* Please refer to the previous page for task explanation.

Justin creates a system of equations based on the equation from part A and the equation from part B. The solution to the system of equations is $(-3, -25)$.

C. Why is the point $(-3, -25)$ not a possible solution in this situation?

$(-3, -25)$ will not work in this problem because when someone is talking about money, it can not be negative. Someone can not have a negative amount of money. Also, for the equation, if you go to put a negative into the problem, next to the x in slope, then the problem will not work, because you can not have a negative amount of weeks.



MATHEMATICS

SECTION 2



51. Justin is joining a gym. The gym is currently offering a discount on the fee to join and on the monthly rate.

The discounted price, in dollars, the gym charges can be represented by the equation $y = 10x + 5$.

- A. What are the slope and the y -intercept of the equation? What do the slope and the y -intercept each represent in this situation?

The slope is 10 and the y -intercept is 5.
The slope and the y -intercept represent the fee to join (\$10) and the monthly rate (\$5).

The regular price, in dollars, the gym charges can be represented by the equation $y = 15x + 20$.

- B. How much money, in dollars, does Justin save the first month by joining the gym at the discounted price rather than at the regular price?

Justin saves \$20 by joining the gym at the discounted price rather than at the regular price.

MATHEMATICS

SECTION 2

51. **Continued.** Please refer to the previous page for task explanation.

Justin creates a system of equations based on the equation from part A and the equation from part B. The solution to the system of equations is $(-3, -25)$.

- C. Why is the point $(-3, -25)$ not a possible solution in this situation?

The point $(-3, -25)$ is not a possible solution in this situation because the negative numbers mean that the gym would be paying him to join.



MATHEMATICS

SECTION 2

51. Justin is joining a gym. The gym is currently offering a discount on the fee to join and on the monthly rate.

The discounted price, in dollars, the gym charges can be represented by the equation $y = 10x + 5$.

- A. What are the slope and the y -intercept of the equation? What do the slope and the y -intercept each represent in this situation?

The slope and y -intercept
will represent the price
the gym charges

x represents the amount
Justin will pay

x represents the
monthly rate

The regular price, in dollars, the gym charges can be represented by the equation $y = 15x + 20$.

- B. How much money, in dollars, does Justin save the first month by joining the gym at the discounted price rather than at the regular price?

Justin saves \$30 by joining the
gym at the discounted price
the discount price is \$55 the
regular price is \$85 so Justin
saved \$30

MATHEMATICS

SECTION 2

51. *Continued.* Please refer to the previous page for task explanation.

Justin creates a system of equations based on the equation from part A and the equation from part B. The solution to the system of equations is $(-3, -25)$.

- C. Why is the point $(-3, -25)$ not a possible solution in this situation?

This is not a possible solution because as time goes on Justin system will start to lose money

1	22
2	19
3	16
4	13
5	10
6	7
7	4
8	1

The table shows that at month 4 Justin system lost \$9 from what he started with in month 1.

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The discounted price, in dollars, the gym charges can be represented by the equation $y = 10x + 5$.

- A. What are the slope and the y -intercept of the equation? What do the slope and the y -intercept each represent in this situation?

the slope is 10 and the y -intercept is 5. The slope represents the discounted price and the y -intercept represents the monthly rate.

The regular price, in dollars, the gym charges can be represented by the equation $y = 15x + 20$.

- B. How much money, in dollars, does Justin save the first month by joining the gym at the discounted price rather than at the regular price?

Justin saves 20 dollars the first month by joining the gym at the discounted price.

MATHEMATICS

SECTION 2

51. *Continued.* Please refer to the previous page for task explanation,

Justin creates a system of equations based on the equation from part A and the equation from part B. The solution to the system of equations is $(-3, -25)$.

- C. Why is the point $(-3, -25)$ not a possible solution in this situation?

The point $(-3, -25)$ is not a possible solution because when you solve both equations neither of them add up to $(-3, -25)$ and you can not have negative numbers in this situation.

MATHEMATICS

SECTION 2

51. Justin is joining a gym. The gym is currently offering a discount on the fee to join and on the monthly rate.

The discounted price, in dollars, the gym charges can be represented by the equation $y = 10x + 5$.

- A. What are the slope and the y-intercept of the equation? What do the slope and the y-intercept each represent in this situation?

The slope of this equation is the 10 of $10x$. This means the slope is ten. This represents the monthly rate. The y-intercept of the equation is 5. This represents the fee to join the gym.

The regular price, in dollars, the gym charges can be represented by the equation $y = 15x + 20$.

- B. How much money, in dollars, does Justin save the first month by joining the gym at the discounted price rather than at the regular price?

$$y = 10 \cdot 1 + 5$$

$$y = 15$$

$$y = 15 \cdot 1 + 20$$

$$y = 35$$

Justin saves 20 dollars the first month. You know this by plugging in 1 for x because x represents the number of months.

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F

MATHEMATICS

SECTION 2

F

51. *Continued.* Please refer to the previous page for task explanation.

Justin creates a system of equations based on the equation from part A and the equation from part B. The solution to the system of equations is $(-3, -25)$.

- C. Why is the point $(-3, -25)$ not a possible solution in this situation?

This point is not possible because you can't join for a negative amount of months. You also can tell it is impossible because the -25 would mean the gym is paying for you to go there. And it simply does not work like that.

MATHEMATICS

SECTION 2

51. Justin is joining a gym. The gym is currently offering a discount on the fee to join and on the monthly rate.

The discounted price, in dollars, the gym charges can be represented by the equation $y = 10x + 5$.

- A. What are the slope and the y-intercept of the equation? What do the slope and the y-intercept each represent in this situation?

The slope is $10x$ and the y-intercept is 5.

The y-intercept of 5 is how much you have to pay as a fee to join. The slope of $10x$ is how much you have to pay per month.

The regular price, in dollars, the gym charges can be represented by the equation $y = 15x + 20$.

- B. How much money, in dollars, does Justin save the first month by joining the gym at the discounted price rather than at the regular price?

Justin saves \$20 his first month.

$$\begin{aligned} 15x - 10x &= 5 \\ 20 - 5 &= \frac{+15}{20} \end{aligned}$$



MATHEMATICS

SECTION 2



51. *Continued.* Please refer to the previous page for task explanation.

Justin creates a system of equations based on the equation from part A and the equation from part B. The solution to the system of equations is $(-3, -25)$.

C. Why is the point $(-3, -25)$ not a possible solution in this situation?

$(-3, -25)$ is not a possible solution because you cannot have a negative number of months and money in this situation.

PSSA Math: Justin Joins a Gym (Grade 8), Training Set One

Subject: Math

Item: Justin Joins a Gym

Grade:8

Name _____

Number	Score	Notes
T1-1		
T1-2		
T1-3		
T1-4		
T1-5		
T1-6		
T1-7		
T1-8		
T1-9		
T1-10		