Pre-Algebra Summer Review Part I #1

Student Name : _____ Class Name : **7th Grade ALEKS Section II**

Number of Questions: **60** Instructor Name : **Hoyos, Michelle**

Question 1 of 60

Simplify.

$$w^{-6} \cdot w^{9} \cdot w^{3}$$

Write your answer with a positive exponent only.

Question 2 of 60

Rewrite using a single positive exponent.

$$9^{-2} \cdot 9^{5}$$

Question 3 of 60

For each part below, estimate the number using scientific notation.

Write your answer as a single digit times a power of ten.

(a) A certain solution has a hydrogen ion concentration of 0.000048629 moles per liter.

Estimate using scientific notation: _____

(b) The total surface area of a country is approximately $23{,}970$ square miles.

Estimate using scientific notation: _____

Question 4 of 60

Write $\frac{105}{24}$ as a decimal.

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Question 5 of 60

A water desalination plant can produce 2.6×10^{6} gallons of water in one day. How many gallons can it produce in 5 days?

Write your answer in scientific notation.

Question 6 of 60

A cable is 30 meters long. How long is the cable in decimeters?

Be sure to include the correct unit in your answer.

Question 7 of 60

Write 7×10^{6} in standard notation.

Question 8 of 60

Calculate.

$$\left(2 \times 10^{4}\right)\left(3 \times 10^{3}\right)$$

Write your answer in scientific notation.

Question 9 of 60

Simplify.

$$\left(-2b\,a^{4}\right)^{4}$$

Write your answer without parentheses.

Question 10 of 60

Simplify.

$$\left(z^{3}\right)^{5}$$

Write your answer without parentheses.

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Question 11 of 60

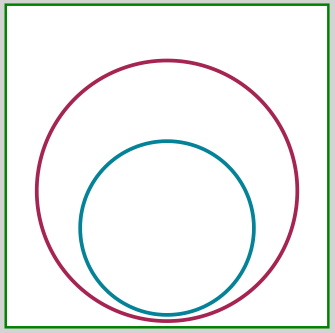
Find the value of $\sqrt[3]{-343}$.

Question 12 of 60

(a) Use the names of the sets to label the regions of the Venn diagram.

Names of the sets

- Whole numbers
- Rational numbers
- Integers



(b) True or False?

Statement	True	False
All whole numbers are rational numbers.		
All integers are whole numbers.		
There are integers that are not rational numbers.		
There are whole numbers that are not integers.		

Question 13 of 60

Find two consecutive whole numbers that $\sqrt{65}$ lies between.

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Question 14 of 60

Evaluate. Simplify your answer.

$$-1.5+\sqrt[3]{(8\div 4)^2\times(-16)}$$

Question 15 of 60

Build a Venn diagram.

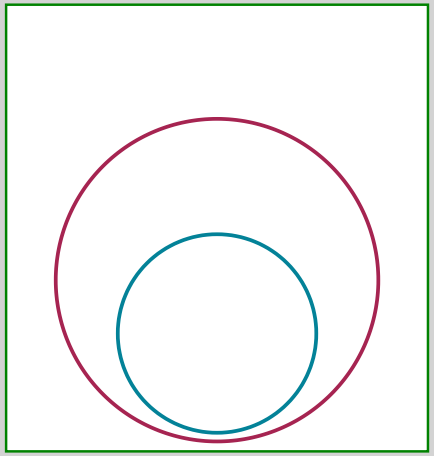
- Use the names of the sets to label the regions.
- Place the numbers in the correct regions.

Names of the sets

- Integers
- Rational numbers
- Whole numbers

Numbers

- -26
- $\frac{1}{11}$
- $0.\overline{6}$
- 30
- 7



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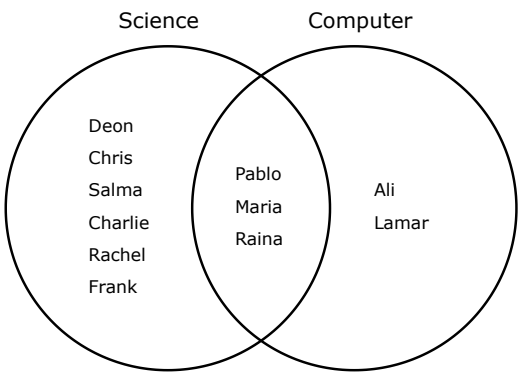
Question 16 of 60

Classify each number below as a rational number or an irrational number.

	rational	irrational
$95.\overline{67}$	○	○
-3π	○	○
64.36	○	○
$\sqrt{36}$	○	○
$\sqrt{22}$	○	○

Question 17 of 60

The Venn diagram shows the memberships for the Science Club and the Computer Club.
Use the diagram to answer the questions below.



(a) How many members does the Computer Club have?

(b) How many students are in the Computer Club but not in the Science Club?

(c) How many students are members of both the Science Club and the Computer Club?

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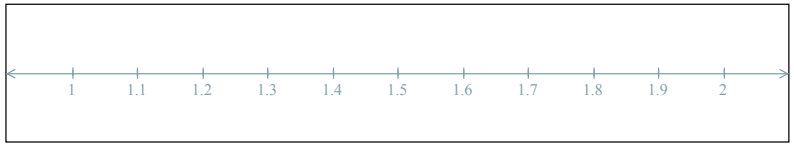
Question 18 of 60

Order these numbers from least to greatest.

$$-6.\overline{5},\ -\sqrt{38},\ 6.23,\ -\frac{19}{3}$$

Question 19 of 60

(a) Plot $4-\sqrt{7}$ and $\sqrt[3]{6}$ on the decimal number line.
Note that you can use a calculator.



(b) Based on your answer above, compare $4-\sqrt{7}$ and $\sqrt[3]{6}$ using $<$, $>$, or $=$.

$4-\sqrt{7}$ _____ $\sqrt[3]{6}$

Question 20 of 60

Order these numbers from least to greatest.

$$5.624,\ 5\frac{5}{8},\ \frac{28}{5},\ 6.71$$

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Question 21 of 60

The equation $9(v+7)=27$ is solved in several steps below.
For each step, choose the reason that best justifies it.

Step	Reason
$9(v+7)=27$	Given equation
$9v+63=27$	-Addition Property of Equality -Subtraction Property of Equality -Multiplication Property of Equality -Division Property of Equality -Simplifying -Distributive Property
$9v+63-63=27-63$	-Addition Property of Equality -Subtraction Property of Equality -Multiplication Property of Equality -Division Property of Equality -Simplifying -Distributive Property
$9v=-36$	-Addition Property of Equality -Subtraction Property of Equality -Multiplication Property of Equality -Division Property of Equality -Simplifying -Distributive Property
$\frac{9v}{9}=\frac{-36}{9}$	-Addition Property of Equality -Subtraction Property of Equality -Multiplication Property of Equality -Division Property of Equality -Simplifying -Distributive Property
$v=-4$	-Addition Property of Equality -Subtraction Property of Equality -Multiplication Property of Equality -Division Property of Equality -Simplifying -Distributive Property

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Question 22 of 60

Solve for u.

$$-u+98=190$$

Question 23 of 60

Hong wanted to fill his bathtub. His faucet poured water at a rate of 6 liters per minute. Hong forgot to plug the drain. So 12 liters were wasted before he plugged the drain and continued to fill the tub. Suppose the tub held 180 liters of water. How long was the faucet on before the tub was filled?

(a) Write an *equation* to help answer the question above.
Choose the correct form below and fill in the blanks using only 6, 12, and 180.
(The variable x is used to represent the number of minutes.)

- ○ $\square x + \square = \square$
- ○ $\square x - \square = \square$

(b) Write an *expression* to help answer the question above.
Choose the correct form below and fill in the blanks using only 6, 12, and 180.

- ○ $\frac{\square + \square}{\square}$
- ○ $\frac{\square - \square}{\square}$

(c) How long was the faucet on before the tub was filled?

$\square$ minutes

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Question 24 of 60

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Each equation below is followed by several stories.

Select *all* of the stories that can be represented by the equation.
If *none* of the stories can be represented, select "None of the above".

(a) $13x-26=377$

☑ Lisa works at an amusement park and earns $\$26$ per hour. She also has to pay $\$13$ per week for transportation. Last week, she worked x hours. She ended up with a total of $\$377$ after paying for transportation.
☐ Lisa works at an amusement park and earns x dollars per hour. She also has to pay $\$13$ per week for transportation. Last week, she worked 26 hours. She ended up with a total of $\$377$ after paying for transportation.
☐ Lisa works at an amusement park and earns x dollars per hour. She also has to pay $\$26$ per week for transportation. Last week, she worked 13 hours. She ended up with a total of $\$377$ after paying for transportation.
☑ Lisa works at an amusement park and earns $\$13$ per hour. She also has to pay $\$26$ per week for transportation. Last week, she worked x hours. She ended up with a total of $\$377$ after paying for transportation.
☐ None of the above

(b) $28x+42=210$

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- [x] Milan has been saving x dollars each week for 28 weeks. Today, his uncle gave him $\$42$. Milan now has enough money for a bike that costs $\$210$.
- [ ] Milan has been saving $\$28$ each week for x weeks. Today, he used $\$42$ of his savings to buy a bike. He now has $\$210$ left in his savings.
- [ ] Milan has been saving x dollars each week for 28 weeks. Today, he used $\$42$ of his savings to buy a bike. He now has $\$210$ left in his savings.
- [x] Milan has been saving $\$28$ each week for x weeks. Today, his uncle gave him $\$42$. Milan now has enough money for a bike that costs $\$210$.
- [ ] None of the above

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Question 25 of 60

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Each equation below is followed by several stories.

Select *all* of the stories that can be represented by the equation.
If *none* of the stories can be represented, select "None of the above".

(a) $22x - 11 = 275$

- [ ] Lamar bought x copies of a book online for $\$22$ each copy. He also paid a shipping fee of $\$11$ for the entire purchase. He spent a total of $\$275$ including the shipping fee.
- [x] Lamar bought x copies of a book online for $\$22$ each copy. He then received a discount of $\$11$ off the entire purchase. He spent a total of $\$275$ after the discount.
- [x] Lamar bought 22 copies of a book for x dollars each copy. He also paid a shipping fee of $\$11$ for the entire purchase. He spent a total of $\$275$ including the shipping fee.
- [ ] Lamar bought 22 copies of a book for x dollars each copy. He then received a discount of $\$11$ off the entire purchase. He spent a total of $\$275$ after the discount.
- [ ] None of the above

(b) $16x + 32$

- [ ] A printing company charges x dollars per banner. There is also a one-time setup fee of $\$16$. Maria printed 32 banners. She paid a total of $\$208$ including the setup fee.
- [x] A printing company charges x dollars per banner. There is also a one-time setup fee of $\$32$. Maria printed 16 banners. She paid a total of $\$208$ including the setup fee.
- [x] A printing company charges $\$16$ per banner. There is also a one-time setup fee of $\$32$. Maria printed x banners. She paid a total of $\$208$ including the setup fee.
- [ ] A printing company charges $\$32$ per banner. There is also a one-time setup fee of $\$16$. Maria printed x banners. She paid a total of $\$208$ including the setup fee.
- [ ] None of the above

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Question 26 of 60

Answer the questions below.

(a) The perimeter of a rectangular field is 376 m.
If the width of the field is 89 m, what is its length?

Length of the field: _____ m

(b) The area of a rectangular painting is $4510\ \text{cm}^2$.
If the length of the painting is 82 cm, what is its width?

Width of the painting: _____ cm

Question 27 of 60

Suppose that 13 inches of wire costs 78 cents.
At the same rate, how many inches of wire can be bought for 54 cents?

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Question 28 of 60

For each value of x, determine whether it is a solution to $7=5x-8$.

x	Is it a solution?	
	Yes	**No**
5	○	○
9	○	○
-10	○	○
-4	○	○

Question 29 of 60

Lashonda drove 290 miles in 5 hours.
At the same rate, how many miles would she drive in 13 hours?

Question 30 of 60

Ravi rented a truck for one day. There was a base fee of $\$15.95$, and there was an additional charge of 81 cents for each mile driven. Ravi had to pay $\$170.66$ when he returned the truck. For how many miles did he drive the truck?

Question 31 of 60

Solve for v.

$$2(v-7)-2=-2(-9v+5)-2v$$

Simplify your answer as much as possible.

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Question 32 of 60

On a survey, 8 students reported how many minutes it takes them to travel to school. Here are their responses.

$$9,\ 12,\ 11,\ 11,\ 9,\ 4,\ 7,\ 15$$

Find the mean travel time for these students.
If necessary, round your answer to the nearest tenth.

Question 33 of 60

A small publishing company is planning to publish a new book. The production costs will include one-time fixed costs (such as editing) and variable costs (such as printing). The one-time fixed costs will total $\$30{,}870$. The variable costs will be $\$9.75$ per book. The publisher will sell the finished product to bookstores at a price of $\$18.50$ per book. How many books must the publisher produce and sell so that the production costs will equal the money from sales?

Question 34 of 60

Solve the inequality for v.

$$\frac{v}{2}-11<22$$

Simplify your answer as much as possible.

Question 35 of 60

Solve for v.

$$-9v-6+7v=16$$

Simplify your answer as much as possible.

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Question 36 of 60

Two pools are being filled with water. To start, the first pool had 728 liters of water and the second pool was empty. Water is being added to the first pool at a rate of 23 liters per minute. Water is being added to the second pool at a rate of 37 liters per minute.

Let x be the number of minutes water has been added.

(a) For each pool, write an expression for the amount of water in the pool after x minutes.

Amount of water in the first pool (in liters) = _____

Amount of water in the second pool (in liters) = _____

(b) Write an equation to show when the two pools would have the same amount of water.

_____

Question 37 of 60

Ashley's penny bank is $\frac{7}{10}$ full. After she removes 240 pennies, it is $\frac{1}{2}$ full. How many pennies can Ashley's bank hold?

Question 38 of 60

Solve the inequality for x.

$$4x - 3 < -15$$

Simplify your answer as much as possible.

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Question 39 of 60

First, complete the story below so that it can be represented by the equation $11x + 10 = 16x$.
Then, solve for x.

(a) Lisa is going to buy x pizzas tonight.
Restaurant A charges $\$$____ per pizza, and there is a $\$$____ ____ {(a) delivery charge., (b) coupon discount.}
Restaurant B charges $\$$____ per pizza, with no other charges or discounts.
The total cost (with all charges and discounts) is ____ {(a) the same for the two restaurants., (b) more for Restaurant A., (c) more for Restaurant B.}

(b) For this equation (and story): $x =$ ____

Question 40 of 60

Keith asked his classmates to choose their favorite color.
He ended up with the tally table below.

How many students chose orange?

Color	Tally
Green	𝍸 |
Orange	||
Blue	𝍸 |
Purple	𝍸 𝍸

Question 41 of 60

There is a sales tax of $\$15$ on an item that costs $\$153$ before tax. A second item costs $\$81.60$ before tax.
What is the sales tax on the second item?

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Question 42 of 60

Teresa buys apples from the local orchard. The table below shows the relationship between the cost C (in dollars) and the weight W (in kilograms) of the apples purchased.

Weight (kilograms)	0	1	2	3
Cost (dollars)	0	4	8	12

(a) For the information in the table, write an equation to represent the relationship between C and W.

(b) Choose the correct statement to represent this relationship.

- Apples cost 4 dollars per kilogram.
- Apples cost 12 dollars per kilogram.
- Apples cost 1 dollar per 4 kilograms.
- Apples cost 1 dollar per kilogram.

Question 43 of 60

A gas station is 28 kilometers away. How far is the gas station in miles? Use the following conversion: 1 mile is 1.6 kilometers.

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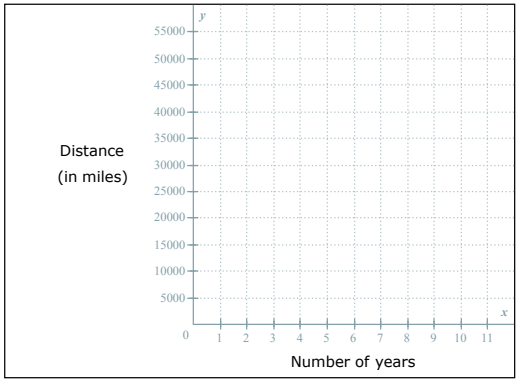
Question 44 of 60

Each year Miguel drives 5000 miles.

Use this information to fill in the table. Then plot the ordered pairs given by the table.

Number of years	Distance (in miles)
2	
5	
8	



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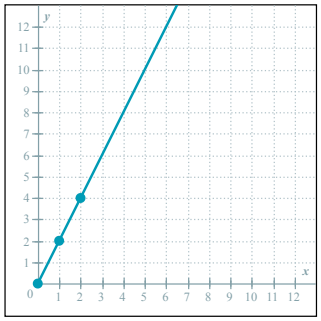
Question 45 of 60

Each graph below shows a relationship between x and y.

For each graph, determine whether x and y are proportional.
If x and y are proportional, fill in the blank with a number.

Graph 1

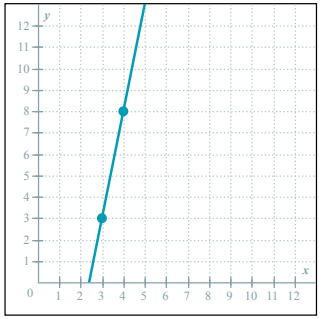


- Proportional

  y is _____ times x

- Not proportional

Graph 2



- Proportional

  y is _____ times x

- Not proportional

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Question 46 of 60

A meteor crashed onto a planet and caused a crater that was $11{,}234.45$ in deep.
Use the table of facts to find the depth of the crater in *yards.*
Round your answer to the nearest tenth.

Conversion facts for length
12 inches (in) = 1 foot (ft)
3 feet (ft) = 1 yard (yd)
36 inches (in) = 1 yard (yd)
5280 feet (ft) = 1 mile (mi)
1760 yards (yd) = 1 mile (mi)

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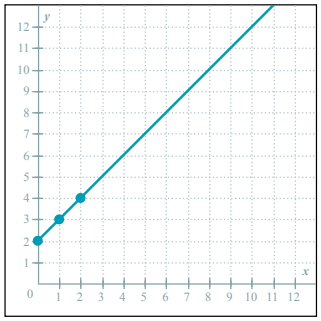
Question 47 of 60

Each graph below shows a relationship between x and y.

For each graph, determine whether x and y are proportional.
If x and y are proportional, fill in the blank with a number.

Graph 1

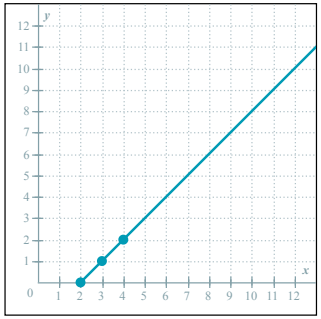


- Proportional

  y is _____ times x

- Not proportional

Graph 2



- Proportional

  y is _____ times x

- Not proportional

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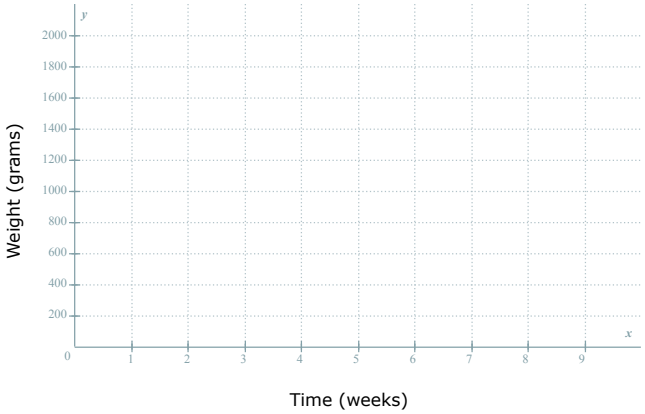
Question 48 of 60

A puppy weighs 800 grams when it is born. During the early stages of its life, the puppy gains 600 grams per week. Let x be the time (in weeks) since the puppy was born, and let y be its weight (in grams).

(a) Graph the line that shows the relationship between x and y.



(b) Choose the correct statement about the relationship between x and y.

- The graph is a line that goes through the origin, so the relationship is proportional.
- The graph is a line that goes through the origin, so the relationship is *not* proportional.
- The graph is a line that does *not* go through the origin, so the relationship is proportional.
- The graph is a line that does *not* go through the origin, so the relationship is *not* proportional.

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Question 49 of 60

Here are some facts about units of weight.

Unit	Symbol	Fact
ounce	oz	
pound	lb	$1 \text{ lb} = 16 \text{ oz}$
ton	T	$1 \text{ T} = 2000 \text{ lb}$

Fill in the blanks.

$64 \text{ oz} = \frac{_____}{\text{lb}}$

$14{,}000 \text{ lb} =$ _____ T

Question 50 of 60

Solve the following proportion for u.

$$\frac{3}{17} = \frac{5}{u}$$

Round your answer to the nearest tenth.

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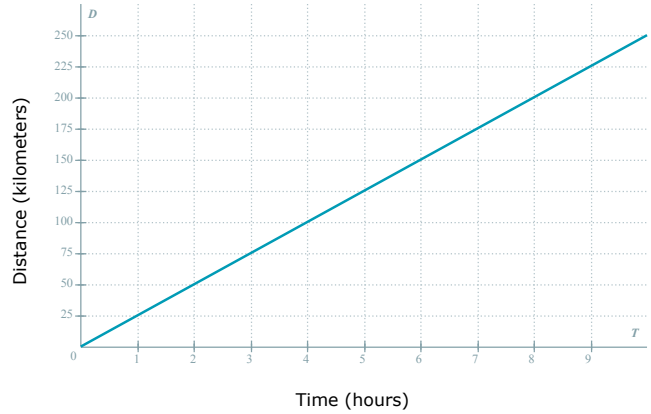
Question 51 of 60

A boat is traveling through the water. The graph below shows the relationship between the distance D (in kilometers) and the time T (in hours) the boat has traveled.



(a) Write an equation to represent the relationship between D and T.

_____

(b) Choose the correct statement to represent this relationship.

- The boat is traveling 50 kilometers per hour.
- The boat is traveling 1 kilometer per hour.
- The boat is traveling 1 kilometer per 25 hours.
- The boat is traveling 25 kilometers per hour.

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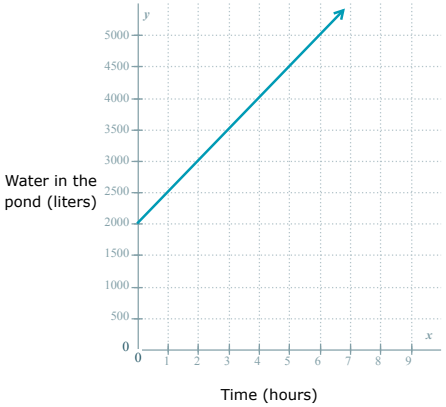
Question 52 of 60

Owners of a recreation area are adding water to a pond. The graph below shows the amount of water in the pond (in liters) versus the amount of time that water is added (in hours).

Use the graph to answer the questions.



(a) What is the slope of the line?

_____

(b) How much does the amount of water increase for each hour that water is added?

_____ liters

Question 53 of 60

For each table, determine whether it shows that x and y are proportional.

If x and y are proportional, fill in the blank with a number in simplest form.

Table 1

x	5	6	7	8
y	25	30	35	40

- Proportional

  y is _____ times x

- Not proportional

Table 2

x	5	7	9	11
y	5	21	45	77

- Proportional

  y is _____ times x

- Not proportional

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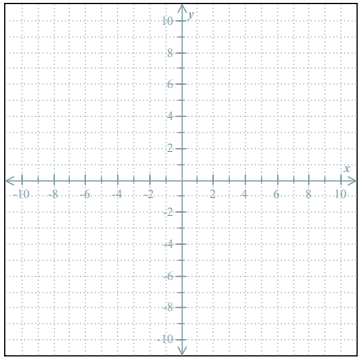
Question 54 of 60

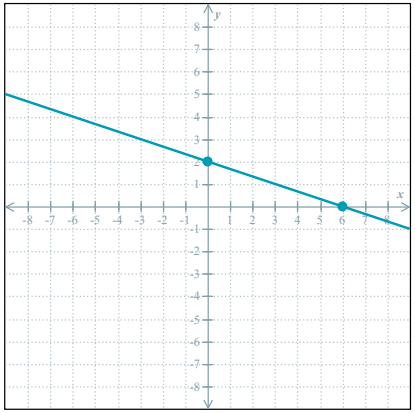
Graph the line.

$$y = -\frac{1}{3}x + 6$$



Question 55 of 60

Write an equation of the line below.



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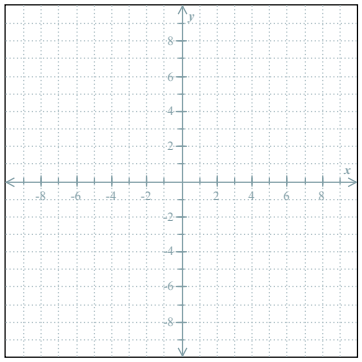
Question 56 of 60

Graph the line $x=-8$.



Question 57 of 60

Chris buys cases of juice boxes. The table below shows the relationship between the number of cases C and the amount of juice J (in liters) purchased.

Number of cases	1	2	3	4
Amount of juice (liters)	9	18	27	36

(a) For the information in the table, write an equation to represent the relationship between C and J.

(b) Choose the correct statement to represent this relationship.

- There are $\frac{1}{9}$ liters of juice per case.
- There are 9 liters of juice per case.
- There is 1 liter of juice per case.
- There is 1 liter of juice per 9 cases.

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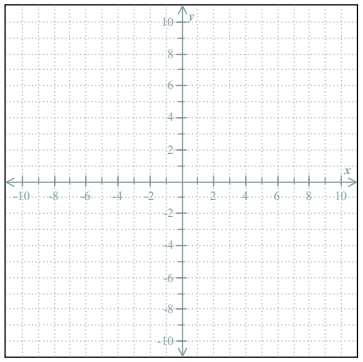
Question 58 of 60

Graph the line with slope 2 passing through the point $(-2, 5)$.



Question 59 of 60

For each equation, determine whether x and y are directly proportional (that is, if the equation shows direct variation).

If so, then find the constant of proportionality (the constant of variation).

(a) $y=3x+\frac{1}{7}$

- Proportional

  Constant of proportionality: $k=$____

- Not proportional

(b) $y=-8x$

- Proportional

  Constant of proportionality: $k=$____

- Not proportional

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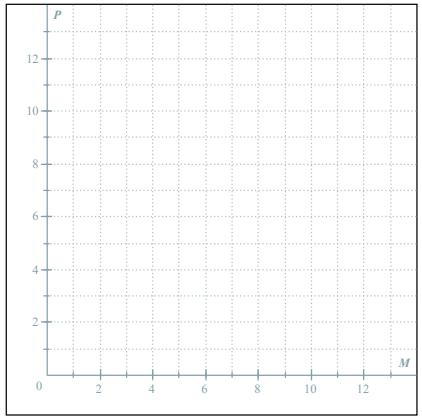
Question 60 of 60

A printer prints 6 photos each minute.

Let P be the number of photos printed in M minutes.

Write an equation relating P to M. Then graph your equation using the axes below.

Equation: _____



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