**Name:** _____ **Rising Algebra I Summer Math**

**1.** Round $5.0143$ to the nearest hundredth.

**2.** Round $7.473$ to the nearest tenth.

**3.** Round $3.66$ to the nearest whole number.

**4.** Round $5.4938$ to the nearest hundredth.

**5.** Round $5.5123$ to the nearest hundredth.

**6.** Evaluate the expression shown below and write your answer as a fraction or mixed number in simplest form.

$$\frac{7}{15} + \frac{10}{9}$$

**7.** Evaluate the expression shown below and write your answer as a fraction or mixed number in simplest form.

$$\frac{1}{10} + \frac{3}{80}$$

**8.** Evaluate the expression shown below and write your answer as a fraction or mixed number in simplest form.

$$\frac{3}{7} - \frac{5}{3}$$

**9.** Evaluate the expression shown below and write your answer as a fraction or mixed number in simplest form.

$$\frac{8}{23} + \frac{3}{23}$$

**10.** Evaluate the expression shown below and write your answer as a fraction or mixed number in simplest form.

$$\frac{5}{4} + \frac{7}{36}$$

**11.** Perform the operation and simplify the answer fully.

$$\frac{\frac{9}{5}}{\frac{4}{5}}$$

**12.** Perform the operation and simplify the answer fully.

$$\frac{5}{9} \cdot \frac{2}{7}$$

**13.** Perform the operation and simplify the answer fully.

$$\frac{\frac{1}{9}}{\frac{3}{5}}$$

**14.** Perform the operation and simplify the answer fully.

$$\frac{8}{3} \cdot \frac{7}{6}$$

**15.** Perform the operation and simplify the answer fully.

$$\frac{3}{4} \cdot \frac{7}{9}$$

**16.** Convert $\frac{49}{50}$ into a decimal.

**17.** Convert $\frac{13}{60}$ into a decimal.

**18.** Convert $\frac{9}{40}$ into a decimal.

**19.** Convert $\frac{11}{30}$ into a decimal.

**20.** Convert $\frac{33}{40}$ into a decimal.

**21.** Convert $0.66$ to a fraction in simplest form.

**22.** Convert $0.315$ to a fraction in simplest form.

**23.** Convert $0.615$ to a fraction in simplest form.

**24.** Convert $0.659$ to a fraction in simplest form.

**25.** Convert $0.598$ to a fraction in simplest form.

**26.** Simplify to a single power of 3:

$$\frac{3^5}{3^3}$$

**27.** Simplify to a single power of 4:

$$\left(4^5\right)^3$$

**28.** Simplify to a single power of 6:

$$6^4 \cdot 6^6$$

**29.** Simplify to a single power of 6:

$$\left(6^3\right)^5$$

**30.** Simplify to a single power of 3:

$$3^6 \cdot 3^5$$

**31.** Use multiplication to expand the expression below. Then compute.

$$5^4$$

**32.** Use an exponent to condense the expression below. Then compute.

$$4 \times 4$$

**33.** Use multiplication to expand the expression below. Then compute.

$$7^4$$

**34.** Use an exponent to condense the expression below. Then compute.

$$9 \times 9 \times 9 \times 9$$

**35.** Use multiplication to expand the expression below. Then compute.

$$6^4$$

**36.** Use an exponent to condense the expression below. Then compute.

$$-5 \times -5$$

**37.** Use multiplication to expand the expression below. Then compute.

$$(-3)^5$$

**38.** Use an exponent to condense the expression below. Then compute.

$$-7 \times -7 \times -7 \times -7$$

**39.** Use multiplication to expand the expression below. Then compute.

$$(-9)^2$$

**40.** Use multiplication to expand the expression below. Then compute.

$$(-9)^5$$

**41.** Use an exponent to condense the expression below. Then compute. Express your answer as a fraction in simplest form.

$$\frac{17}{21} \times \frac{17}{21}$$

**42.** Use multiplication to expand the expression below. Then compute. Express your answer as a fraction in simplest form.

$$\left(\frac{1}{19}\right)^2$$

**43.** Use multiplication to expand the expression below. Then compute. Express your answer as a fraction in simplest form.

$$\left(\frac{15}{22}\right)^2$$

**44.** Use an exponent to condense the expression below. Then compute. Express your answer as a fraction in simplest form.

$$\frac{5}{19} \times \frac{5}{19}$$

**45.** Use multiplication to expand the expression below. Then compute. Express your answer as a fraction in simplest form.

$$\left(\frac{7}{22}\right)^2$$

**46.** Use an exponent to condense the expression below.

$$b \cdot b \cdot b \cdot b \cdot b \cdot b \cdot b \cdot b \cdot b \cdot b \cdot b$$

**47.** Use exponents to condense the expression below.

$$a \cdot a \cdot a \cdot a \cdot b \cdot b \cdot b \cdot b \cdot c \cdot c \cdot c$$

**48.** Use multiplication to fully expand the expression below.

$$ac^6$$

**49.** Use an exponent or exponents to condense the expression below.

$$xz \cdot xz \cdot xz$$

**50.** Use exponents to condense the expression below.

$$x \cdot z \cdot z \cdot x \cdot y \cdot z \cdot x \cdot z \cdot z \cdot z \cdot x$$

**51.** Use multiplication to expand the expression below. Then compute and/or simplify.

$$(-2c)^2$$

**52.** Use multiplication to expand the expression below. Then compute and/or simplify.

$$(5ab)^2$$

**53.** Use one exponent to condense the expression below. Then compute and/or simplify.

$$2xz \cdot 2xz \cdot 2xz \cdot 2xz$$

**54.** Use one exponent to condense the expression below. Then compute and/or simplify.

$$3y \cdot 3y \cdot 3y \cdot 3y \cdot 3y$$

**55.** Use one exponent to condense the expression below. Then compute and/or simplify.

$$-3xz \cdot -3xz \cdot -3xz \cdot -3xz \cdot -3xz$$

**56.** Combine like terms.

$$2x + 7 + 6x^3 - 1 + 3 - 6x - 4x$$

**57.** Combine like terms.

$$2y^2 - 2 + 4x - 2x + 3 - 2x + 5y^2$$

**58.** Combine like terms.

$$2 - x^3 - 4 + 3y + y + y + 5$$

**59.** Combine like terms.

$$-6x^2 + 7x + 4x^2 - 3x - 3y - 2x + 4x^2$$

**60.** Combine like terms.

$$x^2 + 4 + 5y^3 + 2x^2 - 2x^2 - 6 + 1$$

**61.** Which expression is equivalent to $p - 9p + 6p$?

A. $1 - 3p$ B. $-2p$

C. $p - 3$ D. $-16p$

**62.** Which expression is equivalent to $-2 + w + 8w$?

A. $7w$ B. $-1 + 8w$

C. $9w - 2$ D. $5w$

**63.** Which expression is equivalent to $-p - 10 + 10p - 2$?

A. $-12 + 9p$ B. $-11p + 8$

C. $9p - 8$ D. $-11p - 12$

**64.** The width of a rectangle measures $(4m + 6n)$ centimeters, and its length measures $(9m + 9n)$ centimeters. Which expression represents the perimeter, in centimeters, of the rectangle?

A. $30n + 26m$ B. $13m + 15$

C. $30 + 26m$ D. $6 + 18n + 26m$

**65.** A triangle has side lengths of $(10u + 9v)$ centimeters, $(2u + 8w)$ centimeters, and $(6w - 5v)$ centimeters. Which expression represents the perimeter, in centimeters, of the triangle?

A. $12u + 4v + 14w$ B. $10uw + 19uv + vw$

C. $15v + 3w + 12u$ D. $12vw + 18uw$

**66.** Which expression is equivalent to $g + 0.95g + 0.06g$?

A. $g + 1.01$ B. $1 + 1.01g$

C. $-0.01g$ D. $2.01g$

**67.** The width of a rectangle measures $(5.1t + 9.7u)$ centimeters, and its length measures $(7.5t - 9.6u)$ centimeters. Which expression represents the perimeter, in centimeters, of the rectangle?

A. $0.1 + 12.6t$

B. $25.2t + 0.2$

C. $0.2u + 25.2t$

D. $9.7 - 19.2u + 25.2t$

**68.** A triangle has side lengths of $(3.1s + 2.5t)$ centimeters, $(4.6s + 5.2u)$ centimeters, and $(8.4u - 8.9t)$ centimeters. Which expression represents the perimeter, in centimeters, of the triangle?

A. $7.7s - 6.4t + 13.6u$

B. $16.1su - 1.2tu$

C. $-0.5u + 7.7s + 7.7t$

D. $5.6st + 9.8su - 0.5tu$

**69.** Which expression is equivalent to $6.7x + 5.3 + 1.6x + 4.8$?

A. $12x + 6.4$

B. $10.1 + 8.3x$

C. $5.1x + 0.5$

D. $5.1x + 10.1$

**70.** A triangle has side lengths of $(7.5v + 1.9)$ centimeters, $(5.1v - 6.5)$ centimeters, and $(5.6w - 2.4)$ centimeters. Which expression represents the perimeter, in centimeters, of the triangle?

A. $8v + 3.2w$

B. $-7 + 5.6w + 12.6v$

C. $12.6v - 4.6 + 3.2w$

D. $3.2w - 1.4 + 9.4v$

**71.** What is the value of the expression $8w - 4$ when $w = 8$?

**72.** What is the value of the expression $9w - 4x$ when $w = 5$ and $x = 4$?

**73.** What is the value of the expression $z^2 + 7z - 2$ when $z = 9$?

**74.** What is the value of the expression $6y + 7$ when $y = 5$?

**75.** What is the value of the expression $2w + 2$ when $w = 8$?

**76.** Write an equivalent expression by distributing the "$-$" sign outside the parentheses:

$$1.3k - (9m + 5.8)$$

**77.** Write an equivalent expression by distributing the "$-$" sign outside the parentheses:

$$-(-f + 9.1g + 9.7)$$

**78.** Write an equivalent expression by distributing the "$-$" sign outside the parentheses:

$$-(1.1d - 3)$$

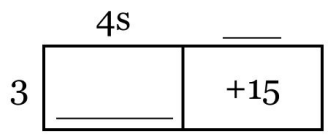
**79.** Write an equivalent expression by distributing the "$-$" sign outside the parentheses:

$$-(3.9w - 10x) + 3.1$$

**80.** Write an equivalent expression by distributing the "$-$" sign outside the parentheses:

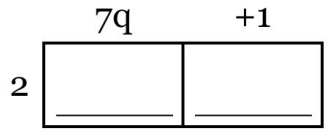
$$-5.5m - (-5n + 1)$$

**81.** Enter the missing values in the area model to find $3(4s + 5)$



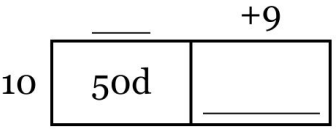

According to the model above, $3(4s + 5) =$ _____

**82.** Enter the missing values in the area model to find $2(7q + 1)$



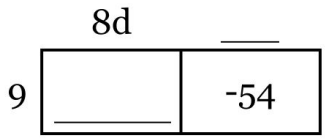

According to the model above, $2(7q + 1) =$ _____

**83.** Enter the missing values in the area model to find $10(5d + 9)$



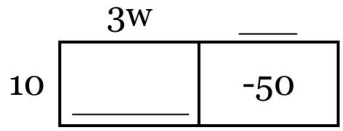

According to the model above, $10(5d + 9) =$ _____

**84.** Enter the missing values in the area model to find $9(8d-6)$




According to the model above, $9(8d-6) =$ _____

**85.** Enter the missing values in the area model to find $10(3w-5)$




According to the model above, $10(3w-5) =$ _____

**86.** Use the distributive property to write an equivalent expression.

$$9(3m+8n-5)$$

**87.** Use the distributive property to write an equivalent expression.

$$10(q+6r)$$

**88.** Use the distributive property to write an equivalent expression.

$$2(k+4)$$

**89.** Use the distributive property to write an equivalent expression.

$$10(h-9k+7)$$

**90.** Use the distributive property to write an equivalent expression.

$$2(9t+5v-3)$$

**91.** Find the value of $x$ in the equation below.

$$60 = 10x$$

**92.** Find the value of $x$ in the equation below.

$$\frac{x}{5} = 6$$

**93.** Find the value of $x$ in the equation below.

$$x - 15 = 8$$

**94.** Find the value of $x$ in the equation below.

$$18 = 4 + x$$

**95.** Find the value of $x$ in the equation below.

$$10 = \frac{x}{3}$$

**96.** Solve for u.

$$u - 9 = 2$$

**97.** Solve for c.

$$-7 = c + 9$$

**98.** Solve for a.

$$a - 6 = -9$$

**99.** Solve for a.

$$-5 = a - 1$$

**100.** Solve for y.

$$-8 = y - 10$$

**101.** Solve for w. You must write your answer in fully simplified form.

$$14w = -7$$

**102.** Solve for u. You must write your answer in fully simplified form.

$$9u = 5$$

**103.** Solve for n. You must write your answer in fully simplified form.

$$-18 = -4n$$

**104.** Solve for y. You must write your answer in fully simplified form.

$$2y = -16$$

**105.** Solve for y. You must write your answer in fully simplified form.

$$-2y = 20$$

**106.** Solve for y.

$$7 = \frac{y}{9}$$

**107.** Solve for n.

$$6 = \frac{n}{-9}$$

**108.** Solve for x.

$$-3 = \frac{x}{-8}$$

**109.** Solve for r.

$$\frac{r}{2} = 7$$

**110.** Solve for u.

$$10 = \frac{u}{-3}$$

**111.** Solve for $a$ and simplify your answer.

$$-\frac{4}{5}a = -10$$

**112.** Solve for $n$ and simplify your answer.

$$\frac{5}{2}n = -15$$

**113.** Solve for $b$ and simplify your answer.

$$-6 = \frac{2}{5}b$$

**114.** Solve for $w$ and simplify your answer.

$$\frac{5}{4}w = 14$$

**115.** Solve for $x$ and simplify your answer.

$$7 = \frac{6}{5}x$$

**116.** Solve for $b$.

$$3b - 39 = -78$$

**117.** Solve for $z$.

$$51 = 45 + \frac{z}{11}$$

**118.** Solve for $z$.

$$43 = 20 + \frac{z}{3}$$

**119.** Solve for $b$.

$$-7b - 12 = -61$$

**120.** Solve for $x$.

$$-22 - \frac{x}{9} = -19$$

**121.** Solve for $a$.

$$-3.1 + \frac{a}{1.4} = -5.6$$

**122.** Solve for $b$.

$$2.3 - 0.3b = 3.35$$

**123.** Solve for $b$.

$$6.48 = 2.7 - 1.4b$$

**124.** Solve for $c$.

$$7.35 = 2.1 + 2.5c$$

**125.** Solve for $b$.

$$-\frac{b}{1.8} + 0.8 = -0.7$$

**126.** Solve for $b$.

$$26 = \frac{1}{2}b + 19$$

**127.** Solve for $b$.

$$17 = 14 + \frac{1}{2}b$$

**128.** Solve for $a$.

$$5 + \frac{7}{8}a = 82$$

**129.** Solve for $b$.

$$\frac{2}{9}b + 24 = 32$$

**130.** Solve for $y$.

$$26 = 11 + \frac{5}{12}y$$

**131.** Solve for $x$. Express your answer as a proper or improper fraction in simplest terms.

$$-\frac{1}{9}x - \frac{1}{3} = \frac{1}{2}$$

**132.** Solve for $b$. Express your answer as a proper or improper fraction in simplest terms.

$$\frac{3}{8}b - \frac{1}{6} = \frac{1}{4}$$

**133.** Solve for $z$. Express your answer as a proper or improper fraction in simplest terms.

$$\frac{1}{2} = \frac{3}{5} - \frac{2}{3}z$$

**134.** Solve for $y$. Express your answer as a proper or improper fraction in simplest terms.

$$\frac{2}{3} - \frac{1}{3}y = \frac{1}{2}$$

**135.** Solve for $a$. Express your answer as a proper or improper fraction in simplest terms.

$$\frac{1}{4} = -\frac{7}{12}a + \frac{3}{4}$$

**136.** What value of $w$ makes the equation below true?

$$5w - 10 = 15$$

A. $2$ B. $5$ C. $12$ D. $15$

**137.** Which equation has the solution $x = 8$?

A. $7x - 4 = 52$ B. $5x + 2 = -42$

C. $8x + 7 = 35$ D. $5x + 3 = 68$

**138.** Which equation has the solution $x = 3$?

A. $3x - 2 = 7$ B. $3x - 8 = 34$

C. $7x + 2 = -23$ D. $5x - 8 = 30$

**139.** What value of $z$ makes the equation below true?

$$8z + 6 = 14$$

A. 1 B. 6 C. 9 D. 13

**140.** Which equation has the solution $x = 2$?

A. $5x + 1 = 34$ B. $9x - 7 = 101$

C. $3x - 9 = -3$ D. $3x - 1 = -5$

**141.** Which value of x satisfies the equation $\frac{2}{5}\left(x - \frac{1}{6}\right) = \frac{17}{15}$?

A. $-2$ B. $-3$ C. 2 D. 3

**142.** Which value of x satisfies the equation $\frac{5}{2}\left(x - \frac{5}{2}\right) = \frac{15}{4}$?

A. 3 B. $-4$ C. 4 D. $-3$

**143.** Which value of x satisfies the equation $\frac{5}{4}\left(x + \frac{1}{2}\right) = \frac{95}{8}$?

A. $-10$ B. 10 C. $-9$ D. 9

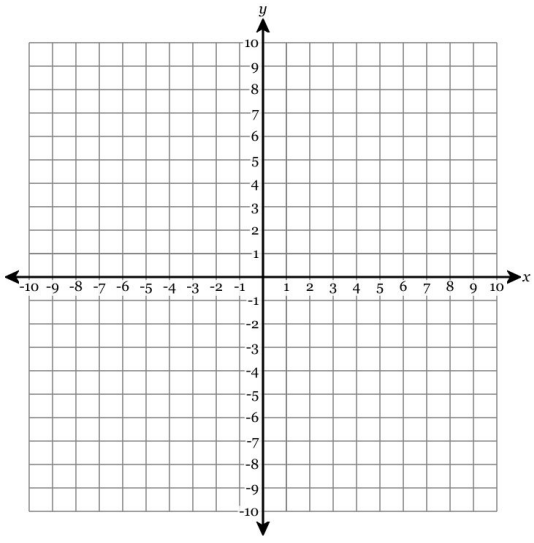
**144.** Which value of x satisfies the equation $\frac{1}{2}\left(x - \frac{1}{6}\right) = \frac{17}{12}$?

A. 2 B. $-2$ C. 3 D. $-3$

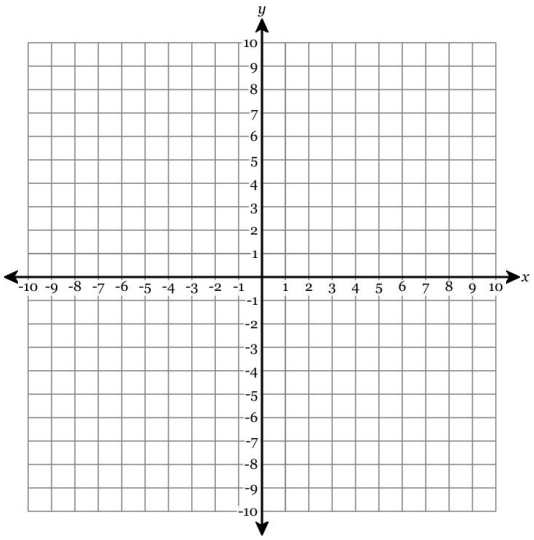
**145.** Which value of x satisfies the equation $\frac{1}{3}\left(x - \frac{5}{2}\right) = \frac{1}{2}$?

A. 3 B. $-4$ C. $-3$ D. 4

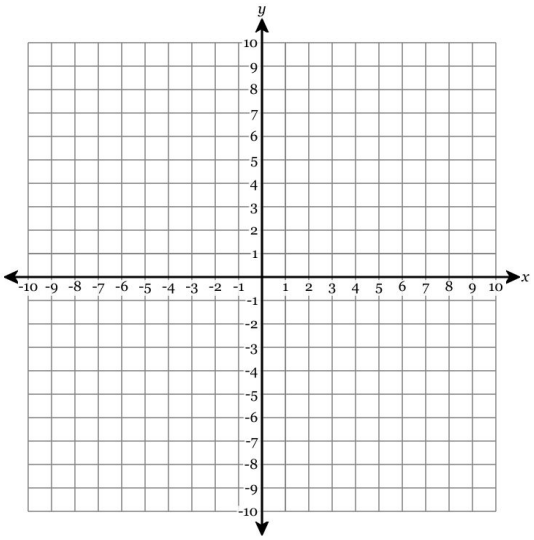
**146.** Plot the point $(5, -4)$.



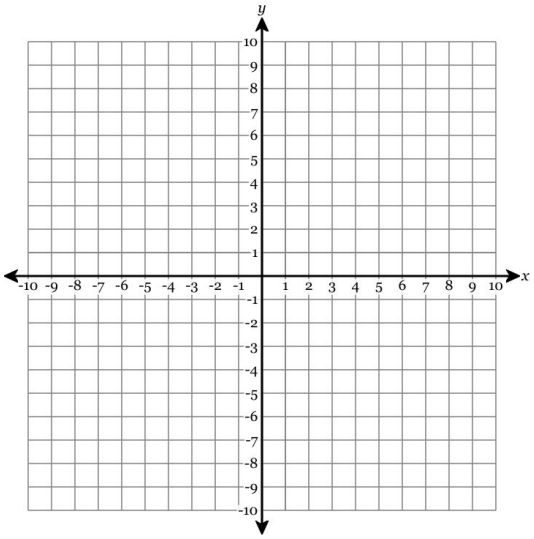
**147.** Plot the point $(7, 8)$.



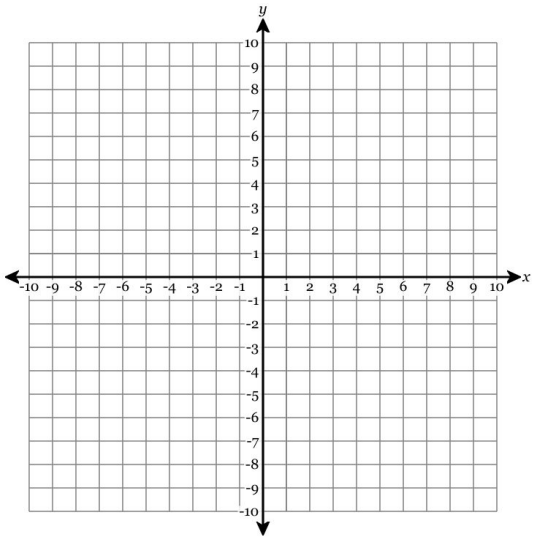
**148.** Plot the point $(3, 0)$.



**149.** Plot the point $(6, 1)$.

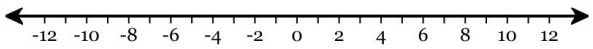


**150.** Plot the point $(2, 0)$.



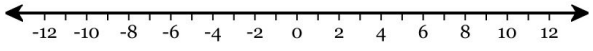
**151.** Solve for $x$ and graph the solution on the number line below.

$$\frac{x}{3} \leq 3$$



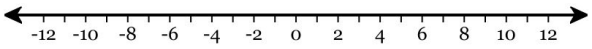

**152.** Solve for $x$ and graph the solution on the number line below.

$$9x \geq -72$$



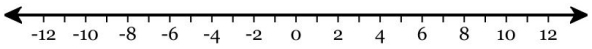
**153.** Solve for $x$ and graph the solution on the number line below.

$$0 < -9x$$



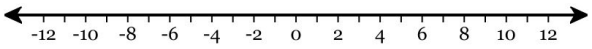

**154.** Solve for $x$ and graph the solution on the number line below.

$$12 + x > 16$$




**155.** Solve for $x$ and graph the solution on the number line below.

$$0 \geq 9 + x$$




**156.** Which inequality is true when the value of $y$ is $11$?

A. $-y+4>10$ B. $-y+4<10$

C. $-y+4<-10$ D. $y+4<10$

**157.** Which inequality is true when the value of $v$ is $-12$?

A. $-v-2\leq 5$ B. $-v-2\leq -5$

C. $v-2\geq -5$ D. $-v-2\geq -5$

**158.** Which inequality is true when the value of $h$ is $-9$?

A. $-h-2\leq 3$ B. $h-2\geq 3$

C. $-h-2\geq -3$ D. $-h-2\leq -3$

**159.** Which inequality is true when the value of $k$ is $10$?

A. $-k+10\geq -1$ B. $-k+10\leq -1$

C. $-k+10\geq 1$ D. $k+10\leq -1$

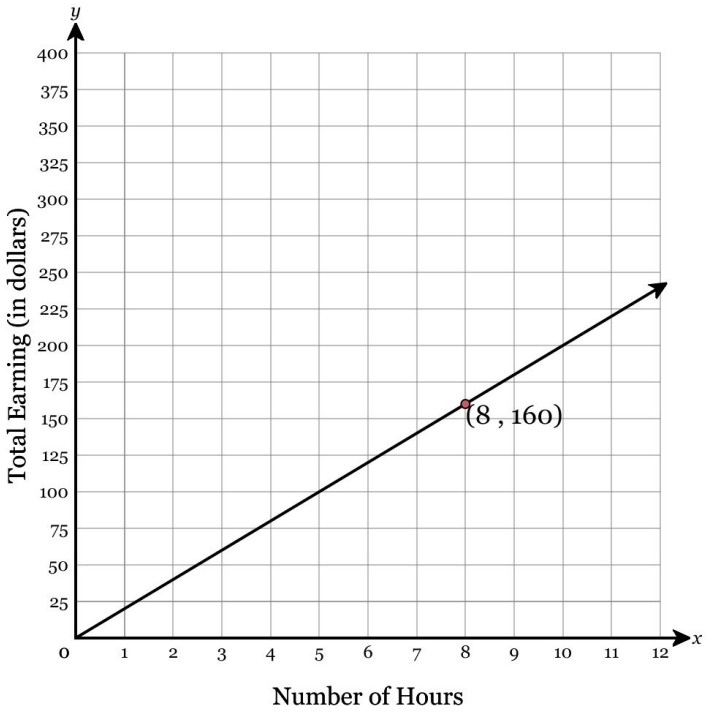
**160.** Which inequality is true when the value of $y$ is $8$?

A. $-y+3\geq -2$ B. $y+3\geq -2$

C. $y+3\leq -2$ D. $-y+3\geq 2$

**161.** Connor has just gotten a new job. The relationship between the number of hours he works, $x$, and his total earnings, $y$, is represented by the graph below.

What does the ordered pair $(8, 160)$ indicate?




A. Connor earns $160.00 per hour for 8 hours

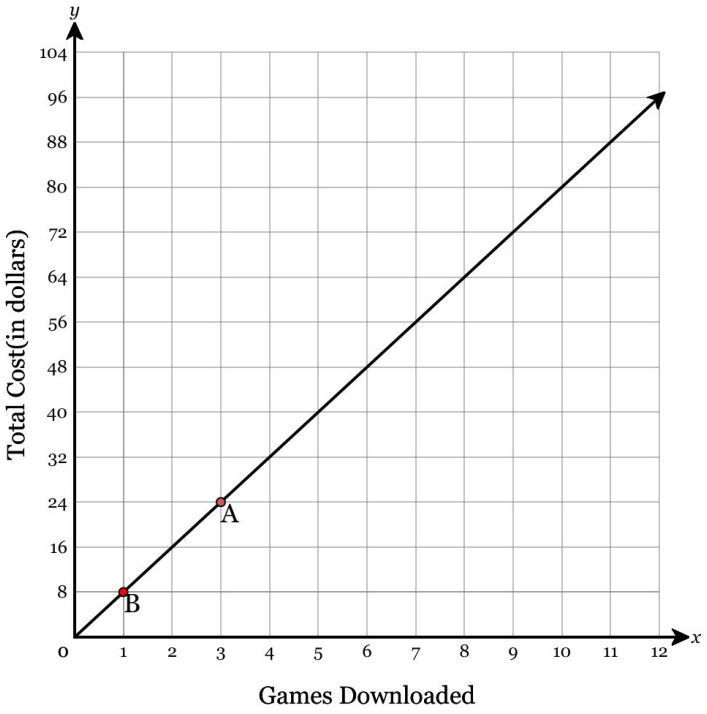
B. Connor earns a total of $8.00 over 160 hours

C. Connor earns a total of $160.00 over 8 hours

D. Connor earns $8.00 per hour for 160 hours

**162.** Kevin buys mobile games via an app store on his phone. The relationship between the number of games downloaded, $x$, and the total cost in dollars of the downloads, $y$, is represented by the graph below.

Two points, A and B, are labeled. Which statement about the graph is true?




A. Point A means that the unit rate is $24.00 per game

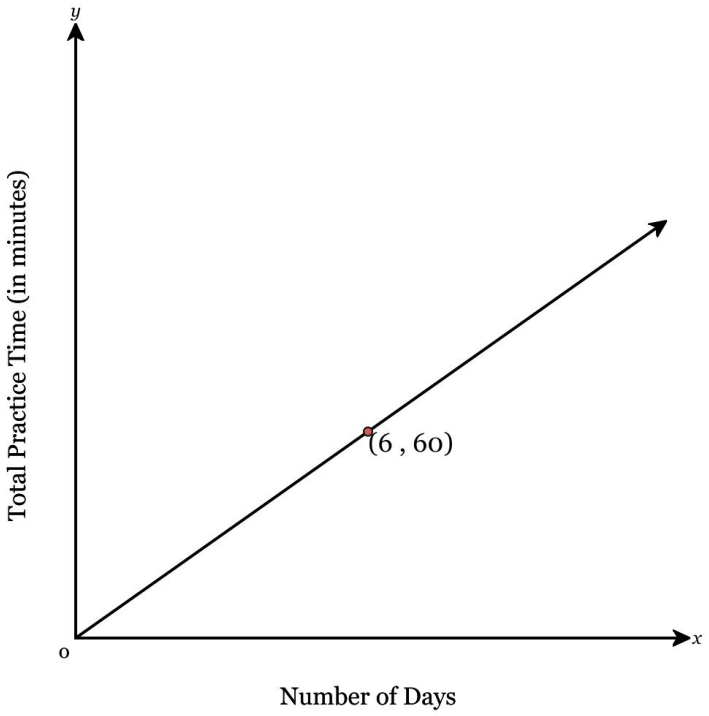
B. Point B means that the unit rate is $8.00 per game

C. Point B means that the unit rate is 8 games per dollar

D. Point A means that the unit rate is 3 games per dollar

**163.** Mei Mei practices the piano the same number of minutes each day. The relationship between the number of days, $x$, and the total number of minutes she practices, $y$, is represented by the graph below.

What is the constant of proportionality as shown in the graph?




A. 60

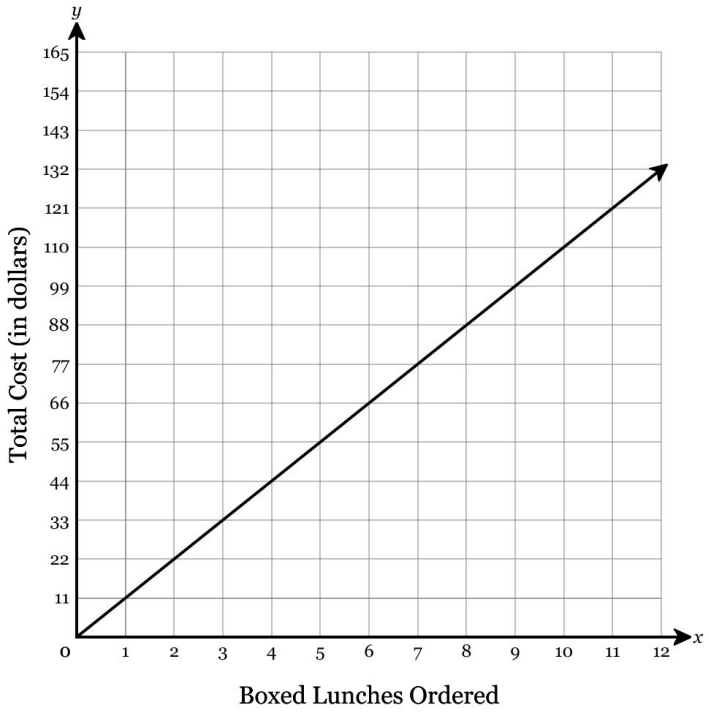
B. 6

C. 10

D. 54

**164.** A company orders boxed lunches from a deli, which all cost the same price. The relationship between the number of boxed lunches ordered, $x$, and the total cost in dollars of the lunches, $y$, is represented by the graph below.

What point on the graph represents the unit rate?




A. $(1 , 11)$

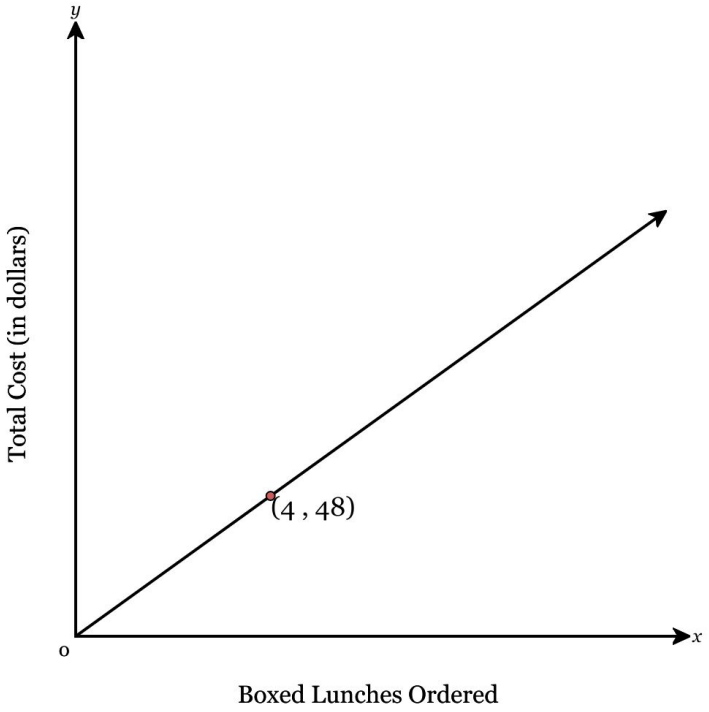
B. $(11 , 1)$

C. $(0 , 0)$

D. $(2 , 22)$

**165.** A company orders boxed lunches from a deli, which all cost the same price. The relationship between the number of boxed lunches ordered, $x$, and the total cost in dollars of the lunches, $y$, is represented by the graph below.

A point $(4, 48)$ is labeled below. Which statement about the graph is true?




A. The unit rate is 4 lunches per dollar

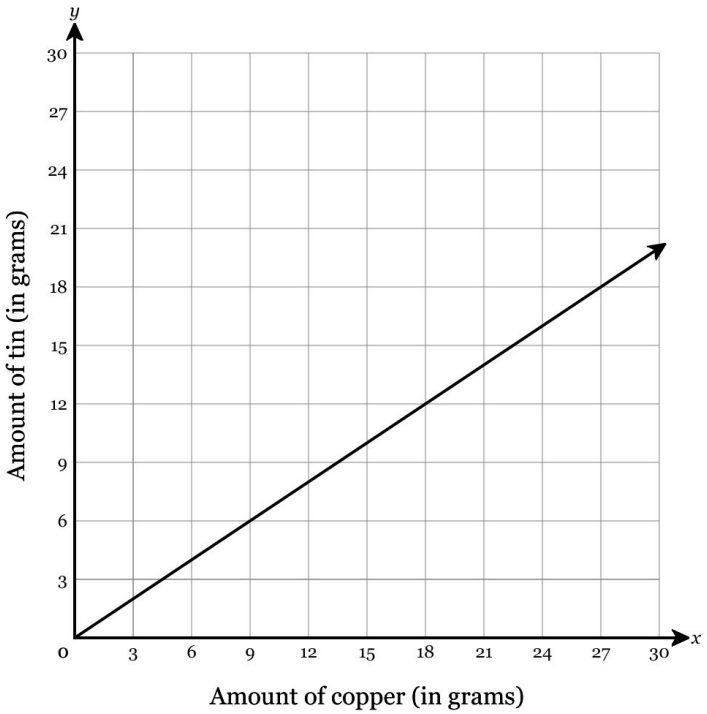
B. The unit rate is $12.00 per lunch

C. The unit rate is 12 lunches per dollar

D. The unit rate is $48.00 per lunch

**166.** An alloy is a combination of two or more metals. A certain alloy of metal is made up of copper and tin. The relationship between the number of grams of copper in the alloy, $x$, and the number of grams of tin in the alloy, $y$, is represented by the graph below.

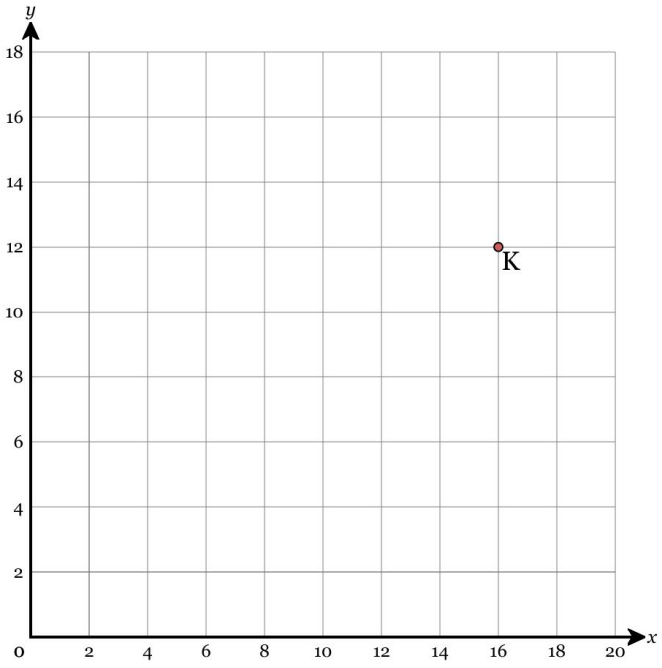
What is the constant of proportionality as shown in the graph?




A. $\frac{2}{5}$ B. $\frac{2}{3}$ C. $\frac{1}{3}$ D. $\frac{3}{5}$

**167.** Line KJ represents a proportional relationship. Point K lies at $(16, 12)$ as shown on the graph below.

Which ordered pair could represent the coordinates of point $J$?




A. $(2\,,\,1.5)$

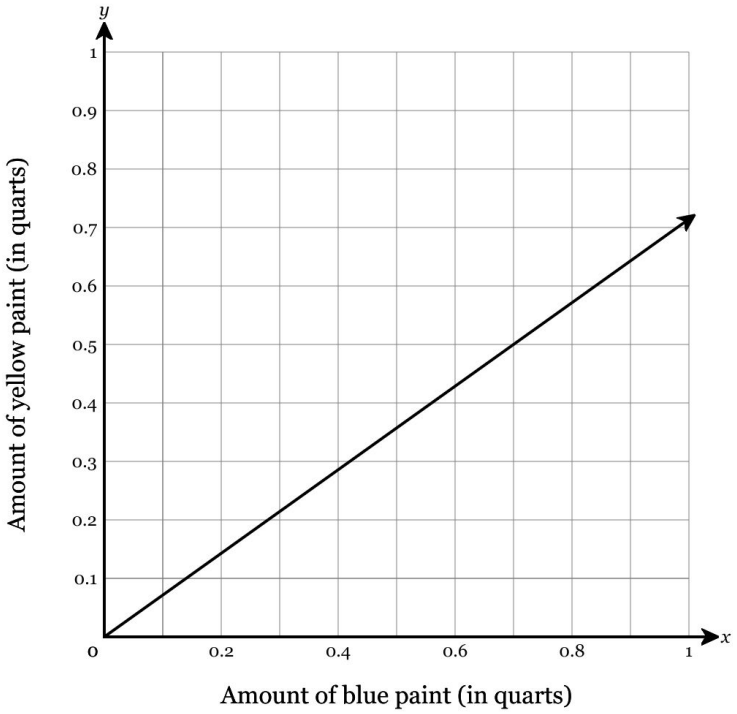
B. $(4, 0)$

C. $(0.8\,,0)$

D. $(1.5\,,\,2)$

**168.** A certain shade of green paint is made by mixing blue and yellow paint. The relationship between the number of quarts of blue paint in the mix, $x$, and the number of quarts of yellow paint, $y$, is represented by the graph below.

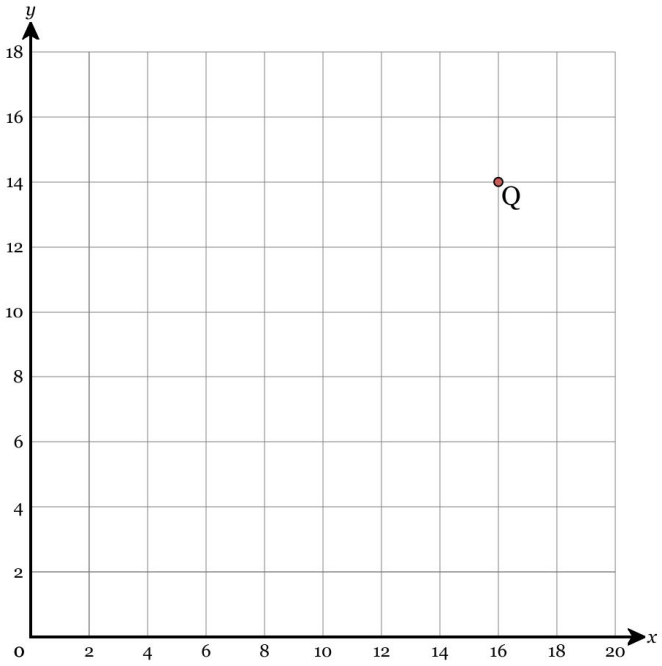
What is the constant of proportionality as shown in the graph?




A. $\frac{5}{7}$ B. $\frac{7}{12}$ C. $\frac{5}{12}$ D. $\frac{1}{3}$

**169.** Line QP represents a proportional relationship. Point Q lies at $(16, 14)$ as shown on the graph below.

Which ordered pair could represent the coordinates of point $P$?




A. $(0.9\,,0)$

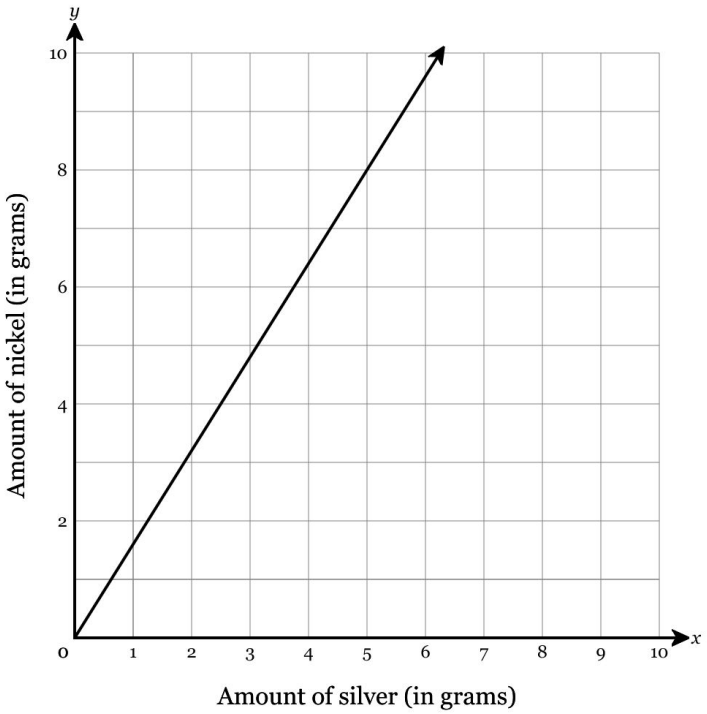
B. $(3.5\,,\,4)$

C. $(12\,,\,10.5)$

D. $(2,0)$

**170.** An alloy is a combination of two or more metals. A certain alloy of metal is made up of silver and nickel. The relationship between the number of grams of silver in the alloy, $x$, and the number of grams of nickel in the alloy, $y$, is represented by the graph below.

What is the constant of proportionality as shown in the graph?




A. $\frac{8}{5}$ B. $\frac{8}{13}$ C. $\frac{5}{13}$ D. $\frac{1}{3}$

**171.** Which expression is equivalent to $5^{-2} \times 5^{5}$?

A. $\frac{1}{5^{10}}$ B. $5^{3}$ C. $\frac{1}{5^{3}}$ D. $\frac{1}{5^{7}}$

**172.** Which expression is equivalent to $\left(6^{-2}\right)^{-1}$?

A. $\frac{1}{36}$ B. $6$ C. $36$ D. $1$

**173.** Which expression is equivalent to $\frac{3^{-4}}{3}$?

A. $3^5$

B. $3^4$

C. $\frac{1}{3^5}$

D. $3^3$

**174.** Which expression is equivalent to $(3^{-6})^{-5}$?

A. $3^{24}$

B. $3^{30}$

C. $\frac{1}{3^{30}}$

D. $\frac{1}{3^{11}}$

**175.** Which expression is equivalent to $5^{-1} \cdot 5$?

A. $\frac{1}{25}$

B. $\frac{1}{5}$

C. $0$

D. $1$