

1. Select the **three** rational numbers.

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

B. $\frac{7}{0}$

C. -0.02

D. $4.1\bar{7}$

E. π

F. π^2

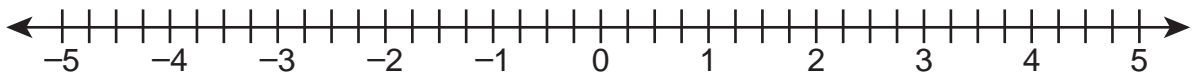
2. Lamar has a container filled with nickels that have a value of \$51.45. He has 4 other identical containers with nickels. Of the 4 other identical containers,

- 2 of them are full,
- 1 of them is $\frac{3}{4}$ full, and
- 1 of them is $\frac{1}{2}$ full.

Lamar estimates that the total value of all 5 containers of nickels is approximately \$250. Which statement **best** explains why Lamar's estimate is likely an overestimate or an underestimate?

- A. Lamar's estimate is likely an underestimate because $5 \times \$51 = \255 .
- B. Lamar's estimate is likely an underestimate because it is likely that at least one of the other 2 full containers contains more than \$51.45.
- C. Lamar's estimate is likely an overestimate because he has just over 4 full containers, and $4 \times \$50 = \200 .
- D. Lamar's estimate is likely an overestimate because it is doubtful that the other full containers are worth exactly \$51.45.

3. A recipe calls for $2\frac{1}{3}$ cups of flour. Jane needs to make only half of the recipe. Which expression could Jane use to calculate the number of cups of flour she needs?
- A. $2\frac{1}{3} + \frac{1}{2}$
- B. $2\frac{1}{3} - \frac{1}{2}$
- C. $2\frac{1}{3} \cdot \frac{1}{2}$
- D. $2\frac{1}{3} \div \frac{1}{2}$
4. Which situation applies an additive inverse to find the total amount of money?
- A. Dylan spent \$5 and then found \$5.
- B. Dylan found \$5 and then found \$5 more.
- C. Dylan spent \$5 and then gave \$3 to a friend.
- D. Dylan found \$5 and then kept the money in his pocket.
5. Diego does a science experiment. In the experiment, he mixes two chemicals together and immediately measures the mixture's temperature. One hour later, he measures the mixture's temperature again. He records the two temperatures as m and n . The temperature of the mixture immediately after creating it, m , is 1.75°C . The value of $|m - n|$ is 2.25°C . Plot all the possible values for n , the temperature of the mixture one hour later.



6. An expression is shown.

$$0.8(4x + 6y)$$

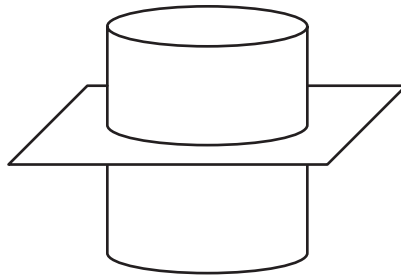
Select the **two** expressions that are equivalent to the given expression.

- A. $0.8(6x + 4y)$
- B. $1.6(2x + 3y)$
- C. $1.6x(2x + 4y)$
- D. $3.2x + 4.8y$
- E. $4.8x + 6.8y$
7. A cat receives 0.15 milliliter of medicine for every 2.5 pounds that it weighs. Tabby is a cat that weighs 9.75 pounds. How much medicine, rounded to the nearest hundredth of a milliliter, should Tabby receive?

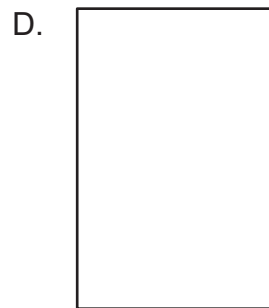
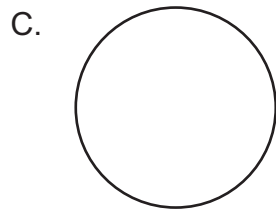
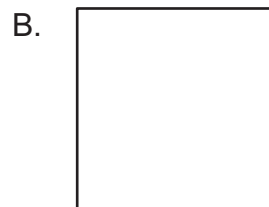
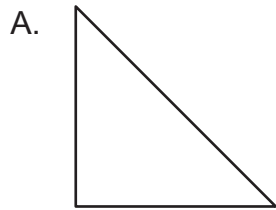
8. Linda ate $\frac{1}{8}$ of a batch of cornbread. Peter ate some cornbread so that there is $\frac{2}{3}$ of the batch remaining. What fraction of the batch of cornbread did Peter eat?

- A. $\frac{3}{11}$
- B. $\frac{5}{24}$
- C. $\frac{8}{11}$
- D. $\frac{19}{24}$

9. A cylinder is sliced parallel to its base, as shown.



Which figure represents the two-dimensional cross section?



10. Louis went to a movie with \$20.00. The ticket cost \$9.50, and he spent \$2.75 on snacks. How much money did Louis have left over?

- A. \$7.75
B. \$8.75
C. \$11.25
D. \$12.25

11. What is $4 \div (-2.5)$?



Grade 7 Mathematics - Session 1

12. Christopher has a website. He updates his website the same number of times each week.
- After 3 weeks, Christopher had updated his website a total of 12 times.
 - After 5 weeks, Christopher had updated his website a total of 20 times.

Christopher makes a graph to show the relationship between the number of weeks that have passed, x , and the number of times he has updated his website, y . Use the numbers below the blank lines to show the coordinates of the point that represents the unit rate, in updates per week, of Christopher's graph.

(_____ , _____)

0 0

1 1

2 2

3 3

4 4

5 5

6 6

7 7

8 8

9 9

10 10

13. Chelsea buys a bag of apples. In the bag, $\frac{8}{11}$ of the apples are green. Which number could also represent the portion of the apples in the bag that are green?

A. 0.72

B. $0.\overline{72}$

C. $0.\overline{7\overline{2}}$

D. 1.375

1. Whenever Hannah turns on her cell phone, it randomly shows a background image from a group of 6 images Hannah has selected. Of the 6 images Hannah has selected,
- exactly 2 are of her friends,
 - exactly 3 are of her family members, and
 - exactly 1 is of her pet dog.

What is the probability that the cell phone shows an image other than the pet dog the next time Hannah turns on her cell phone?

2. A triangle has sides that are 4 units, 6 units, and m units long. Select the **two** numbers that are possible values of m .
- A. 1
 - B. 2
 - C. 5
 - D. 8
 - E. 12

3. A store is offering a 30% discount on shirts. A shirt at the store has an original cost of \$25. What is the cost of the shirt, in dollars, after the discount?

4. A library keeps track of the number of overdue items at the end of each month.
- At the end of April, there were x overdue items.
 - At the end of May, the number of overdue items was 3% less than the number of overdue items at the end of April.

The expression $x - 0.03x$ represents the number of overdue items at the end of May. Which sentence **best** explains how to simplify the expression that represents the number of overdue items at the end of May?

- A. Combine x and $0.03x$, since they are like terms, by canceling out the x .
- B. Combine x and $0.03x$, since they are like terms, by subtracting $1 - 0.03$ to find the new coefficient.
- C. Factor out an x , since it appears in both terms, leaving 1 in the first term and $0.03x$ in the second term.
- D. Factor out an x , since it appears in both terms, eliminating the first term and leaving 0.03 in the second term.
5. There are 50 tickets in a jar. Each ticket is either red or blue. Jeanette randomly draws 10 tickets from the jar, counts the number of red tickets, and then replaces the tickets. She does this 8 times. The list shows how many red tickets Jeanette drew on each attempt.

3 4 6 7 3 4 2 3

What is the **best** estimate for the total number of red tickets in the jar?

- A. 4
- B. 20
- C. 25
- D. 32
6. Jamar is buying bottles of juice for his class party. A pack of 12 bottles of juice costs \$3.96. Which expression could Jamar use to determine the cost of 1 bottle of juice?
- A. $3.96 \div 12$
- B. $3.96 \cdot 12$
- C. $12 \div 3.96$
- D. $12 - 3.96$

7. Carter writes the expression $0.25x + 1.75y + 0.25y + 1.5xy$. He wants to rewrite the expression by combining like terms. For each pair of terms in the table, mark whether they are like terms or not like terms.

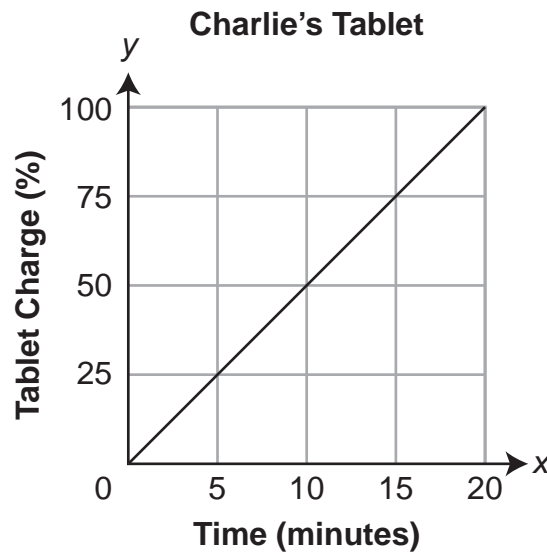
	Like Terms	Not Like Terms
0.25x and 1.75y		
0.25x and 0.25y		
0.25x and 1.5xy		
1.75y and 0.25y		
1.75y and 1.5xy		
0.25y and 1.5xy		

8. Gary has a box of pencils. In the box, $\frac{7}{21}$ of the pencils have been sharpened. Select the **three** fractions that are proportional to the fraction of sharpened pencils in Gary's box.

- A. $\frac{1}{3}$
- B. $\frac{1}{7}$
- C. $\frac{12}{4}$
- D. $\frac{13}{39}$
- E. $\frac{14}{42}$
- F. $\frac{21}{7}$

9. A club is selling cookies to earn money. The club is going to donate $\frac{1}{4}$ of the money to charity and keep the rest. The total cookie sales are \$367.20. Which expression could be used to determine the amount of money the club will keep?
- A. $367.20 - 0.14(367.20)$
B. $367.20 - 0.25(367.20)$
C. $367.20 - 0.4(367.20)$
D. $367.20 - 2.5(367.20)$
10. Arie has a bag that contains 15 yellow marbles, 13 blue marbles, and 22 red marbles. Select the **two** statements that are true when Arie randomly draws 10 marbles from the bag.
- A. She is likely to draw all red marbles.
B. She is likely to draw more blue marbles than red marbles.
C. She is likely to draw more red marbles than yellow marbles.
D. She is likely to draw about the same number of yellow and blue marbles.
E. She is likely to draw more red marbles than yellow and blue marbles combined.
11. Li put \$75 into his savings account. The money was $\frac{1}{3}$ of his paycheck. Which equation could be used to find the amount of money, p , in dollars, on his paycheck?
- A. $75p = \frac{1}{3}$
B. $3p = 75$
C. $75p = 3$
D. $\frac{1}{3}p = 75$

12. Charlie is charging his tablet. The graph shows how long it takes for his tablet to charge.



Which statement about the ordered pair (5, 25) is true?

- A. It takes 5 minutes to charge 25 tablets.
- B. It takes 25 minutes to charge 5 tablets.
- C. It takes 5 minutes to charge 1 tablet to 25%.
- D. It takes 25 minutes to charge 1 tablet to 5%.

13. An inequality is shown.

$$-2x + 12 < 18$$

What is the solution to the inequality?

- A. $x < -3$
- B. $x > -3$
- C. $x < 3$
- D. $x > 3$

14. Emanuel is planting trees along a new city sidewalk. He plants the same number of trees on each city block. After 3 blocks, he has planted 15 trees. After 5 blocks, he has planted 25 trees. At what rate is Emanuel planting trees?
- A. $\frac{1}{5}$ trees per block
- B. $\frac{3}{5}$ trees per block
- C. 3 trees per block
- D. 5 trees per block
15. A sprinkler waters a circular region in Jason's yard that has a radius of 15 feet. Rounded to the nearest square foot, what is the area of the circular region that is watered by the sprinkler?
- A. 94
- B. 148
- C. 707
- D. 2,827
16. A proportional relationship is shown.

x	y
0	0
2	0.9
4	1.8
6	2.7
8	3.6

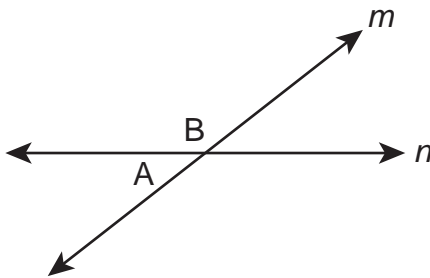
What is the constant of proportionality?

17. Jorge wants to buy his father a gift that costs \$32. He has already saved \$18 for the gift. Jorge saves the same amount of money each week for the next 4 weeks. How much money, in dollars, will Jorge have to save each week to have exactly enough money to buy his father the gift?

18. Lily tosses a fair coin in the air 20 times and records the results. The coin lands with the tails side up in 12 of the 20 trials. Which statement about Lily's trials is correct?

- A. The theoretical probability is 50%, because at least 50% of Lily's coin tosses landed with the tails side up.
- B. The theoretical probability of landing with the tails side up is $\frac{12}{20} = 60\%$, because that is what Lily observed.
- C. The experimental probability is 50%, because at least 50% of Lily's coin tosses landed with the tails side up.
- D. The experimental probability of landing with the tails side up is $\frac{12}{20} = 60\%$, because that is what Lily observed.

19. Lines m and n are shown.



Angle A measures 38° . What is the measure, in degrees, of angle B?

20. An expression is shown.

$$-3(x - 4)$$

Which expression is equivalent to the given expression?

- A. $-3x + 4$
- B. $-3x - 4$
- C. $-3x + 12$
- D. $-3x - 12$

21. Julia uses a scale to weigh three identical stacks of coins.

- The scale has a maximum percent error of 3%.
- The scale says the weight of the first stack of coins is 10.0 ounces.
- The scale says the weight of the second stack of coins is 10.3 ounces.

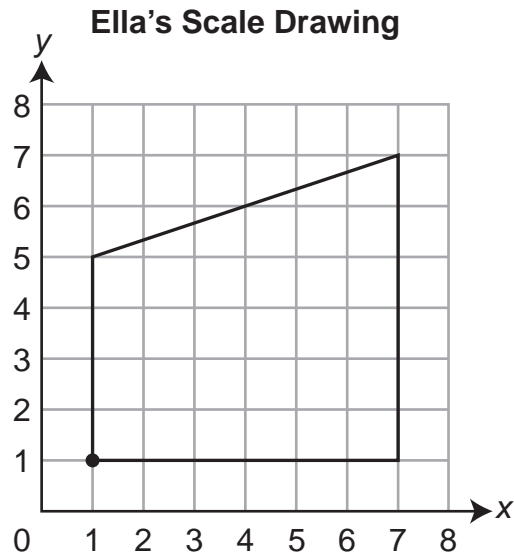
Rounded to the nearest tenth of an ounce, what is the greatest possible amount that the scale could say for the weight of the third stack of coins?

- A. 9.7 ounces
- B. 10.0 ounces
- C. 10.3 ounces
- D. 10.6 ounces

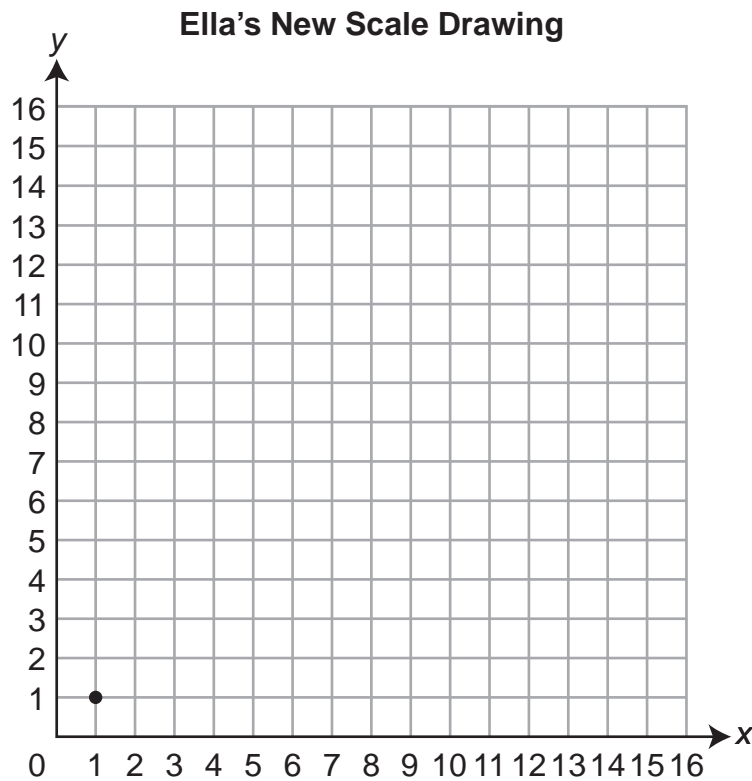
22. Class X and class Y each have 20 students. They each keep track of the number of books each student reads in one month. The mean number of books read by the students in class X is 4.2 books. The mean number of books read by the students in class Y is 3.8 books. Select the **two** statements that are true.

- A. Every student in class X read more books than any student in class Y.
- B. The students in class X like reading more than the students in class Y.
- C. The students in class X read longer books than the students in class Y.
- D. On average, the students in class X read more books than the students in class Y.
- E. The total number of books read by class X is more than the total number of books read by class Y.

23. Ella designs a glass tabletop for a restaurant. She makes the scale drawing shown.



In Ella's scale drawing, the length of each square on the grid represents 12 inches. Make a new scale drawing of Ella's tabletop in which the length of each square on the grid represents 6 inches. The plotted point in Ella's new scale drawing should correspond to the plotted point in Ella's original scale drawing.



24. Chad is putting a frame around a picture. He needs to decide whether he wants the frame to be black or brown. He also needs to decide whether he wants the frame to be made of metal or of wood. Finally, he needs to decide whether he wants the picture covered with glass or with plastic. He makes a list of his options as shown.

{black, metal, glass}
{black, metal, plastic}
{black, wood, glass}
{black, wood, plastic}
{brown, metal, plastic}
{brown, wood, glass}
{brown, wood, plastic}

Which option did Chad forget to include in his list?

- A. {brown, metal}
B. {brown, wood, plastic}
C. {brown, metal, black}
D. {brown, metal, glass}
25. What is the solution to the equation $2(x + 2.4) = 6.4$?
- A. 0.8
B. 2
C. 4
D. 10.4
26. Sophia earned \$18 for working $2\frac{1}{4}$ hours. How much did she earn per hour?
- A. \$8.00
B. \$9.00
C. \$9.25
D. \$12.50

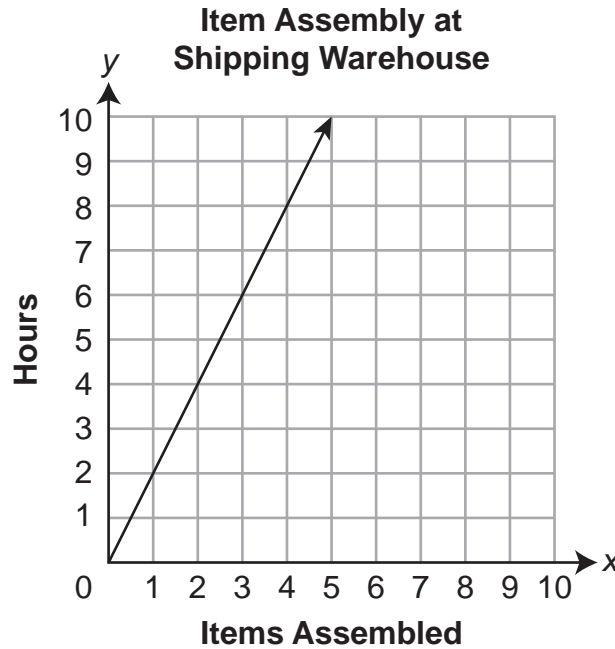
27. In a mine, 0.6% of all the mined material is copper. The company that runs the mine needs the mine to produce more than 0.81 million tons of copper to make a profit this year. The mine has already produced 0.75 million tons of copper this year. The inequality below represents x , the additional millions of tons of material that need to be mined this year for the mine to make a profit.

$$0.75 + 0.006x > 0.81$$

Which inequality shows all the possible values of x ?

- A. $x > 1$
- B. $x > 10$
- C. $x > 26$
- D. $x > 260$

28. The graph shows the number of hours it takes to assemble several items at a shipping warehouse.



What does the point (3, 6) represent?

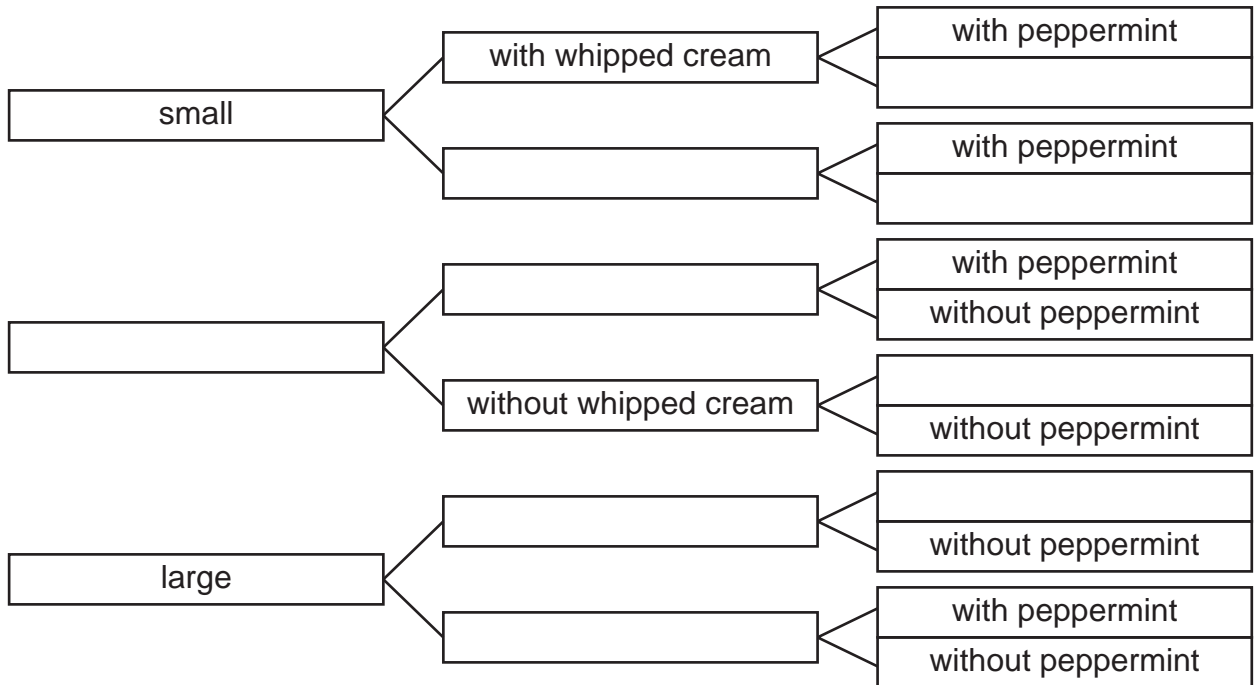
- A. It takes 3 hours to assemble 1 item at the shipping warehouse.
- B. It takes 3 hours to assemble 6 items at the shipping warehouse.
- C. It takes 6 hours to assemble 1 item at the shipping warehouse.
- D. It takes 6 hours to assemble 3 items at the shipping warehouse.

29. Jared sells hot chocolate at football games.

- He sells small, medium, and large hot chocolates.
- Each hot chocolate can be ordered with or without whipped cream.
- Each hot chocolate can be ordered with or without peppermint.

Complete the tree diagram to show all the possible ways hot chocolate can be ordered. The options from which to select are shown below the tree diagram.

Ways Hot Chocolate Can Be Ordered

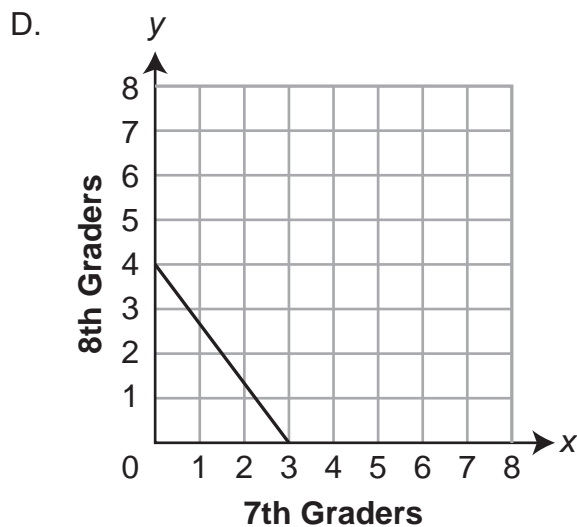
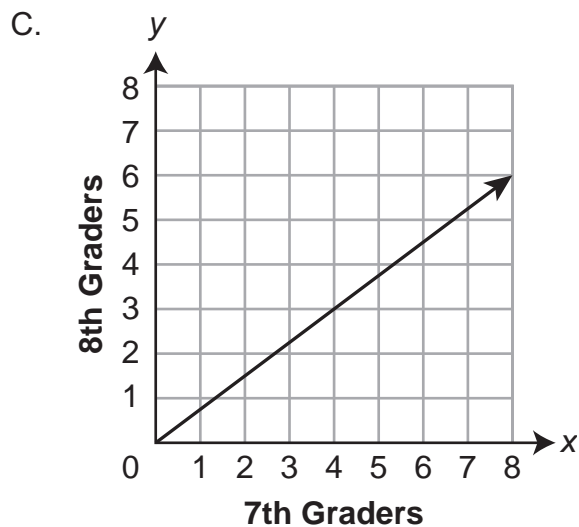
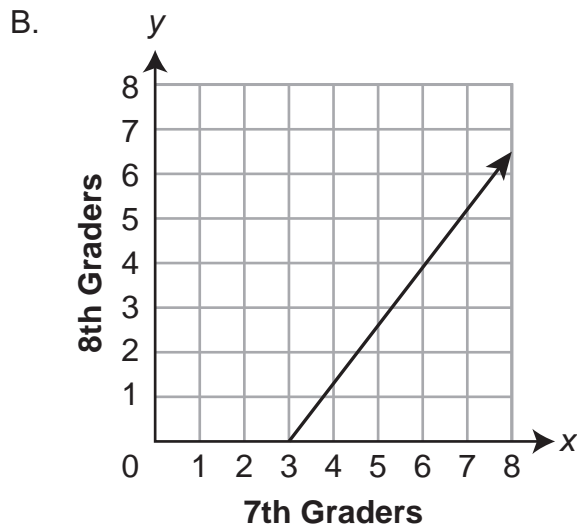
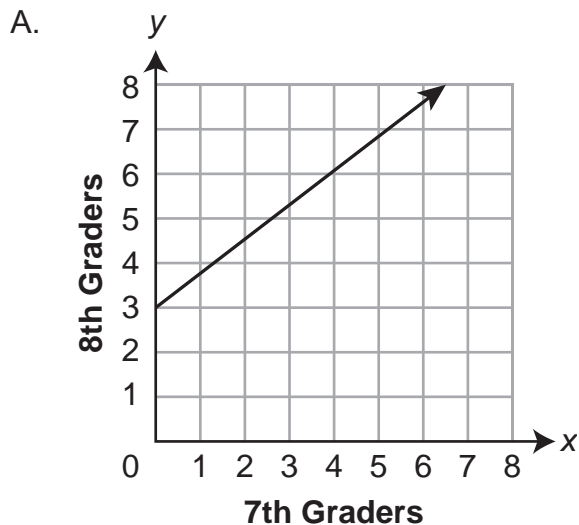


- 1 small
- 2 without whipped cream
- 3 with peppermint
- 4 large
- 5 with whipped cream
- 6 without peppermint
- 7 medium

30. Hector has $\frac{3}{4}$ hour to spend completing his homework. He wants to spend $\frac{1}{3}$ of his time on math homework, 10 minutes of his time on reading homework, and the remaining time on science homework. How much time, in **minutes**, does Hector have to spend on his science homework?

31. Nina works at a company that makes cylindrical cans. She finds the area of the base of one of the cans and then multiplies that area by the height of the can. What is Nina most likely calculating?
- A. length
 - B. radius
 - C. surface area
 - D. volume
32. Ricardo has a coupon for 25% off his purchase at a craft store. Which expression could Ricardo use to calculate his **total cost** when purchasing x dollars of craft supplies?
- A. $0.25x$
 - B. $0.75x$
 - C. $1.00x$
 - D. $1.25x$

33. On a softball team, the number of 7th graders is proportional to the number of 8th graders. Which graph could model the relationship between the number of 7th graders and 8th graders on the softball team?



The town of Lewisville is having a parade. Many people are involved in planning different parts of the parade and judging the parade floats before the parade starts.

1. Ken plans the parade route. He wants the parade to last approximately 1 hour and 20 minutes. The groups in the parade will walk at a rate of 1.25 miles per hour. To determine the length of the parade route, Ken must multiply the length of time of the parade, in hours, by the rate, in miles per hour, that groups will walk. Which expression could Ken use to correctly determine the length of the parade route in miles?
 - A. $1\frac{1}{3} \times 1\frac{1}{4}$
 - B. $1\frac{1}{3} \times 1\frac{5}{12}$
 - C. $1\frac{1}{5} \times 1\frac{1}{4}$
 - D. $1\frac{1}{5} \times 1\frac{2}{5}$

2. The town provides free lemonade for people at the parade. Marty determines how much lemonade to order. He estimates there will be 1,250 people at the parade and that each person will have x cups of lemonade. He uses his estimate and also orders an additional 150 cups of lemonade. He determines that he needs an amount of lemonade equal to 1,087.5 cups. Write an equation that can be used to determine the value of x .

3. Based on Marty's estimate that there will be 1,250 people at the parade, the town's fire department determines how much candy to purchase to give out to children. Cindy estimates that 50% of the people at the parade will be children. Dennis estimates that 40% of the people at the parade will be children. The fire department wants to have between $\frac{1}{10}$ and $\frac{1}{4}$ of a pound of candy for every child at the parade.

What is the **minimum** amount, in pounds, of candy the fire department should have for the parade based on Cindy and Dennis's estimates?

What is the **maximum** amount, in pounds, of candy the fire department should have for the parade based on Cindy and Dennis's estimates?

4. Andrea determines how many people will be able to view the parade in the bleachers placed along the parade route. She estimates that there can be y people per foot of bleachers. The bleachers are in three segments. The segments have lengths of 120.5 feet, 80.5 feet, and 65.5 feet. To represent the total number of people that will be able to view the parade in the bleachers, she writes the expression shown below.

$$120.5y + 80.5y + 65.5y$$

Select the **three** expressions that are equivalent to Andrea's expression.

- A. $266.5y$
- B. $266.5y^3$
- C. $0.5y(120 + 80 + 65)$
- D. $0.5y(241 + 161 + 131)$
- E. $y(120.5 + 80.5y + 65.5y)$
- F. $y(120.5 + 80.5 + 65.5)$

Grade 7 Mathematics - Session 3

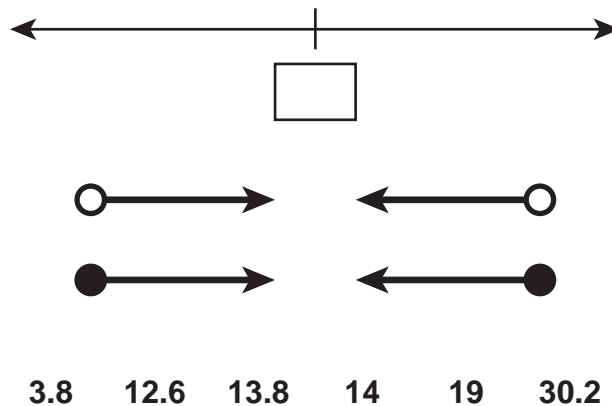
5. Before the parade, all the parade floats are judged in a competition. Information about the judging process is given below.
- There are 5 judges.
 - Each judge gives each parade float a score for the float's theme.
 - Each judge also gives each parade float a score for the float's presentation.
 - A parade float's total score is the sum of all 10 of the judges' scores.

The Lewisville High School parade float earned 22 points for their theme. To win the competition, they need to have a total score greater than 41. To determine the minimum average score from each judge for the parade float's presentation, z , to win the competition, Ken writes the inequality shown below.

$$22 + 5z > 41$$

On the number line below, write a number in the box below the number line. Then, draw an arrow on the number line to show all the possible values for z . The numbers and arrows from which to select are shown below the number line.

Average Score per Judge to Win Competition



ITEM TYPES

CR – Constructed Response

EBSR – Evidence-Based Selected Response

MC – Multiple Choice

MS – Multi-Select Response

SA – Short Answer

TE – Technology Enhanced

WP – Writing Prompt

Session	Item	Type	MLS Code	Answer	Point(s)	Point Breakdown
1	1	MS	7.NS.A.2.e	A, C, D	1	
1	2	MC	7.EE1.B.3.b	C	1	
1	3	MC	7.NS.A.2.f	C	1	
1	4	MC	7.NS.A.1.c	A	1	
1	5	CR (Paper) TE (Online)	7.NS.A.1.e	Plot points at: $-\frac{1}{2}, 4$	1	
1	6	MS	7.EE1.A.1	B, D	1	
1	7	SA	7.NS.A.3	.59	1	
1	8	MC	7.NS.A.1.f	B	1	
1	9	MC	7.GM.A.3	C	1	
1	10	MC	7.NS.A.1.a	A	1	
1	11	SA	7.NS.A.2.a	- 1.6	1	
1	12	MS (Paper) TE (Online)	7.RP.A.2.c	(1,4)	1	
1	13	MC	7.NS.A.2.d	C	1	
2	1	SA	7.DSP.C.5.a	$\frac{5}{6}$	1	
2	2	MS	7.GM.A.2.a	C, D	1	
2	3	SA	7.RP.A.3	7.50	1	
2	4	MC	7.EE1.A.2	B	1	
2	5	MC	7.DSP.A.2	B	1	
2	6	MC	7.RP.A.1	A	1	
2	7	CR (Paper) TE (Online)	7.EE1.A.2	Letters = Columns Numbers = Rows B1, B2, B3, A4, B5, B6	1	<ul style="list-style-type: none"> All correct for 1 point
2	8	MS	7.RP.A.2.a	A, D, E	1	
2	9	MC	7.EE1.B.3.a	B	1	
2	10	MS	7.DSP.A.1.c	C, D	1	
2	11	MC	7.EE1.B.4.a	D	1	
2	12	MC	7.RP.A.2.c	C	1	
2	13	MC	7.EE1.B.4.c	B	1	
2	14	MC	7.RP.A.2.b	D	1	
2	15	MC	7.GM.A.4.b	C	1	
2	16	SA	7.RP.A.2.b	0.45	1	
2	17	SA	7.EE1.B.4.b	3.50	1	
2	18	MC	7.DSP.C.6.c	D	1	
2	19	SA	7.GM.B.5	142	1	
2	20	MC	7.EE1.A.1	C	1	
2	21	MC	7.RP.A.3	D	1	
2	22	MS	7.DSP.B.3	D, E	1	

ITEM TYPES

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EBSR – Evidence-Based Selected Response

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TE – Technology Enhanced

WP – Writing Prompt

Session	Item	Type	MLS Code	Answer	Point(s)	Point Breakdown
2	23	CR (Paper) TE (Online)	7.GM.A.1	Plot points at: (1,1), (1,9), (13,13), (13,1) and connect points with line segments	1	
2	24	MC	7.DSP.C.8.a	D	1	
2	25	MC	7.EEI.B.4.b	A	1	
2	26	MC	7.RP.A.1	A	1	
2	27	MC	7.EEI.B.4.c	B	1	
2	28	MC	7.RP.A.2.c	D	1	
2	29	CR (Paper) TE (Online)	7.DSP.C.8.a	Column 1 7 Column 2 2, 5, 5, 2 OR 2, 5, 2, 5 Column 3 6, 6, 3, 3	1	
2	30	SA	7.EEI.B.3.a	20	1	
2	31	MC	7.GM.B.6.b	D	1	
2	32	MC	7.EEI.A.2	B	1	
2	33	MC	7.RP.A.2.d	C	1	
3	1	MC	7.EEI.B.3.a	A	1	
3	2	SA	7.EEI.B.4.b	$1250x + 150 = 1087.5$	1	<ul style="list-style-type: none"> • Or equivalent equation
3	3	SA	7.EEI.B.3	Box 1 50 Box 2 156.25	2	<ul style="list-style-type: none"> • 2 points for both boxes correct • 1 point for 1 box correct
3	4	MS	7.EEI.A.1	A, D, F	1	
3	5	MS (Paper) TE (Online)	7.EEI.B.4.c	3.8, open circle right pointing arrow	2	<ul style="list-style-type: none"> • 2 points for both correct • 1 point for 1 correct