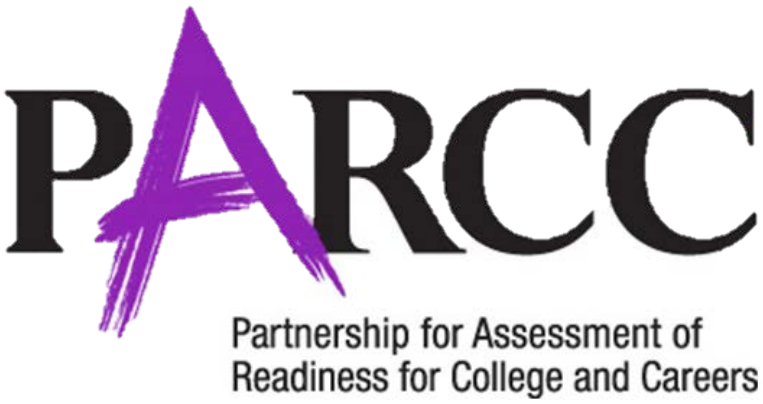


Math

Spring 2018

Grade 7

Released Items

1. **M20097**

Complete the equation to make a true statement.

Drag and drop the appropriate number into each box.

−7	−4	−2	1	2	3

$$7 - \square = 7 + \square$$

2. **M20676**

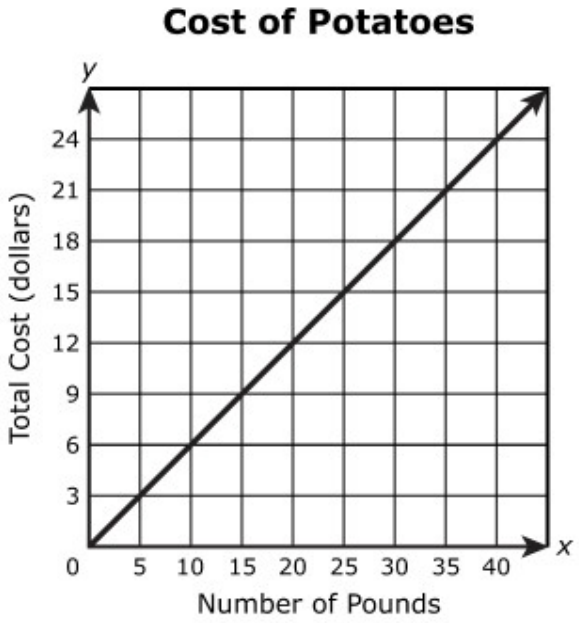
A town's low temperature for January was -8 ° Fahrenheit (°F). The difference between the town's high temperature and low temperature for January was 25°F. What was the town's high temperature, in degrees Fahrenheit, for January?

Enter your answer in the box.

$\square$

3. **M25121**

The graph shows the relationship between the number of pounds of potatoes (x) and the total cost of the potatoes (y).



Which statements about points on the graph of the relationship are correct?

Select **each** correct statement.

- A. The point $(1, 0.60)$ means that 1 pound of potatoes costs \$0.60.
- B. The point $(12, 7.20)$ means that 12 pounds of potatoes cost \$7.20 per pound.
- C. The point $(20, 12)$ means that 12 pounds of potatoes cost \$20.00 per pound.
- D. The point $(25, 15)$ means that 15 pounds of potatoes cost \$25.00.
- E. The point $(30, 18)$ means that 18 potatoes cost \$30.00.
- F. The point $(40, 24)$ means that 40 pounds of potatoes cost \$24.00.

4. **VF647047**

Which expression is equivalent to $\frac{4}{5}x + 1\frac{1}{5}$?

A. $\frac{1}{5}(4x + 1)$

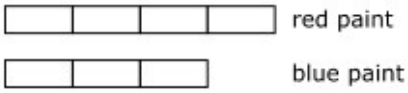
B. $\frac{2}{5}(2x + 3)$

C. $\frac{4}{5}(x + 2)$

D. $\frac{5}{4}(x + 1)$

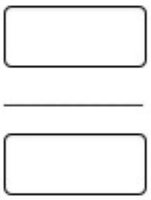
5. **VF904877**

Purple paint is made from mixing red paint and blue paint. The diagram shows the relationship between the amount of red paint and the amount of blue paint needed to make purple paint.



What fraction of each gallon of purple paint is red paint?

Enter your answer in the boxes.



6. **M21983**

In Fairbanks, Alaska, the temperature one day was -18°F. On that same day, the temperature was 83 degrees higher in Honolulu, Hawaii. What was the temperature in Honolulu, Hawaii, on that day?

A. 65°F

B. 75°F

C. 83°F

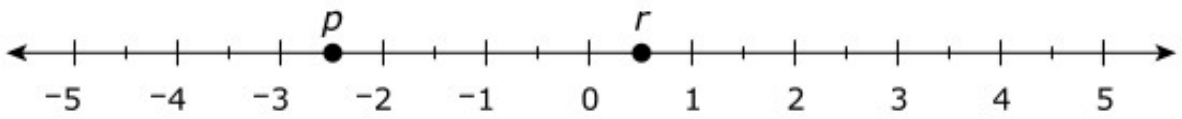
D. 101°F

7. **M25176**

The locations of the values for p and r are shown on the number line.

Determine the location on the number line that best represents the sum of $p + r$.

Select a place on the number line to plot the point.



8. **VF556133**

A box contains 48 snack-sized bags of popcorn.

- The weight of the box when it is empty is 5 ounces.
- The weight of the box with all the bags of popcorn is 35 ounces.

What is the weight, in ounces, of each bag of popcorn? Enter your answer as a decimal.

Enter your answer in the box.

9. **VH145215**

Here is an expression.

$$4\frac{1}{2} \div \frac{1}{4}$$

Which situation can be modeled using this expression?

A. Kim has $4\frac{1}{2}$ cups of flour. She uses $\frac{1}{4}$ cup of flour for a recipe. How many cups of flour does Kim have remaining?

B. Alex has $4\frac{1}{2}$ pages to read for homework. So far, he has finished $\frac{1}{4}$ of his homework. How many pages has Alex read so far?

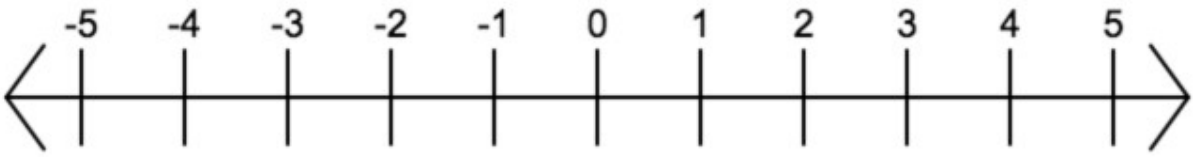
C. Ben has a $4\frac{1}{2}$-foot-long sandwich. He cuts the sandwich into $\frac{1}{4}$-foot-long pieces. How many pieces of sandwich does Ben have?

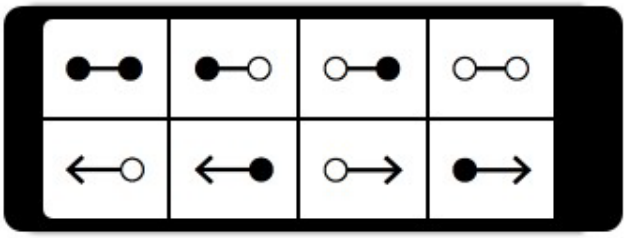
D. Stacy has $4\frac{1}{2}$ hours to get ready for a concert. She spends $\frac{1}{4}$ hour showering. How many hours does Stacy have remaining to get ready?

10. **M20083**

A student has $5.00 to spend on a poster, paint, and stickers. The total cost for the poster and the paint is $2.80. The cost of each sticker is $0.55. Graph the solution set of the inequality that could be used to determine *n*, the number of stickers the student can choose to purchase.

Select a solution set indicator. Drag the points on the indicator to the appropriate locations on the number line.





11. **M22537**

An empty tank is filled with water at a constant rate. The table shows *w*, the number of gallons of water in the tank after *m* minutes.

Water in the Tank

Number of Minutes, *m*	Number of Gallons of Water, *w*
4	66
6	99
20	330

Which equation represents the relationship shown in the table?

A. $w = 1.5m$

B. $w = 16.5m$

C. $w = 33m$

D. $w = 66m$

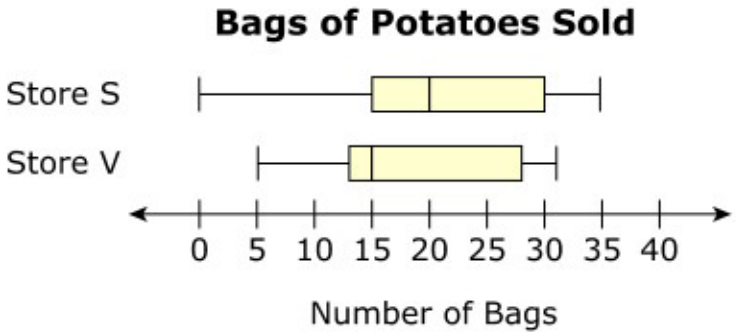
12. **M25283**

Determine the value of the expression $-3.45 + 4.23 - 7.55$.

Enter your answer in the box.

13. **M25792**

A manager recorded the numbers of bags of potatoes sold at each of two stores over the last month. The manager created this box plot, which displays a summary of the data. The interquartile range of the number of bags sold is the same for each store.



Express the difference between the medians of each data set as a multiple of the interquartile range.

Select from each drop-down menu to correctly complete each sentence.

The median number of bags of potatoes sold at Store S is about Choose... than the median number of bags of potatoes sold at Store V.

- Choose...
- 2 fewer
- 5 fewer
- 10 fewer
- 2 more
- 5 more
- 10 more

This difference between the medians is about Choose... times the interquartile range of the number of bags sold from either store.

- Choose...
- 0.33
- 0.67
- 2
- 3

14. **M21364**

The areas of three circles are shown in the table.

Areas of Circles

Circle	Area (square units)
S	78.50
T	12.56
W	50.24

Arrange the circles in order from least circumference to greatest circumference.

Select from the drop-down menus to correctly complete the list.

Circle [Choose...] , Circle [Choose...] , Circle [Choose...]

Choose...
S
T
W

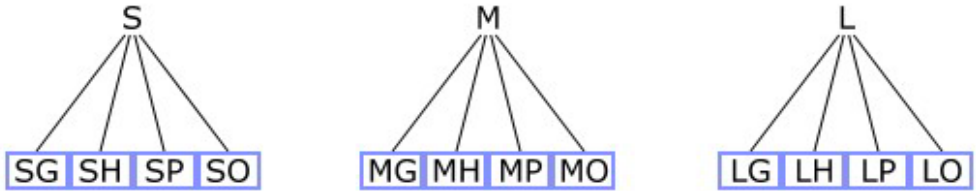
15. **M21129**

Pizza is sold at a restaurant in 3 sizes: small (S), medium (M), and large (L). Customers can choose from 4 toppings to be used on a 1-topping pizza. The 4 toppings are green peppers (G), ham (H), pepperoni (P), and olives (O).

A customer plans to order a large or medium 1-topping pizza with any topping **except** pepperoni (P).

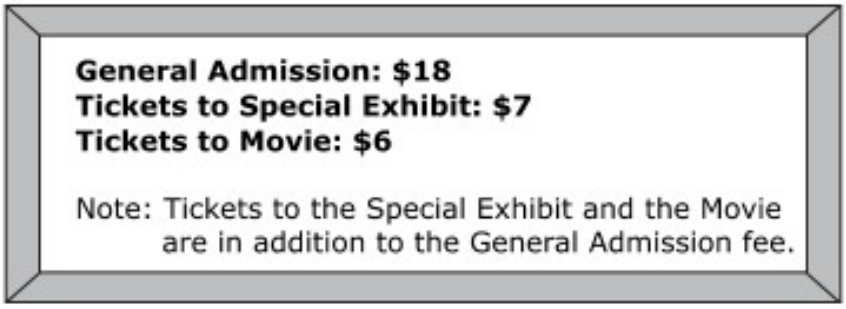
This sample space shows all the types of 1-topping pizzas. Which outcomes in this sample space show the types of pizza the customer may order?

Select **all** correct outcomes.



16. **1047-M20363**

This sign shows admission fees and ticket prices for a museum.



Part A

A group of 5 people paid for general admission to the museum. Some of the people also bought movie tickets. The whole group spent a total of $108 for general admission tickets and movie tickets. Write an equation that can be used to find x, the number of movie tickets purchased.

Drag and drop the appropriate value into each box.

5	6	7	18	30	90
108	x	$5x$	$6x$	$7x$	$18x$

$\square + \square = \square$

Part B

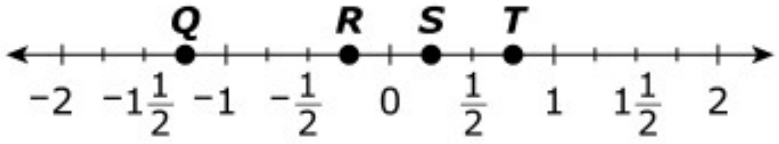
The next day, another group spent a total of $61. Each person in this group paid for general admission, and one person bought a special exhibit ticket. How many people were in this group?

Enter your answer in the box.

$\square$ people

17. **M25731**

Points Q, R, S, and T are plotted on the number line.



- Which two plotted points have a sum of zero?
- Explain how the number line can be used to show that the sum of the two points you identified is zero.
- Explain how the number line can be used to determine the sum of the location of point T and $-1\frac{1}{2}$.

Enter your answer and your explanations in the space provided.

Math symbols

Relations

Geometry

18. **VH225469**

The coordinates of two of the vertices of square *QRST* are shown.

- $Q\ (3.6, 2.1)$
- $R\ (^{-}5.4, 2.1)$

Part A

What is the length, in units, of each side of square *QRST*? Use the coordinates to show or explain how you determined the length.

Enter your answer and your work or explanation in the space provided.

(continues on next page)

Part B

A student claims that vertex *S* of square *QRST* has only one possible location.

Is the student's claim correct?

- If the student's claim is correct, explain why there is only one possible location for vertex *S* and identify this location.
- If the student's claim is incorrect, explain how you know and identify **all** possible locations for vertex *S*.

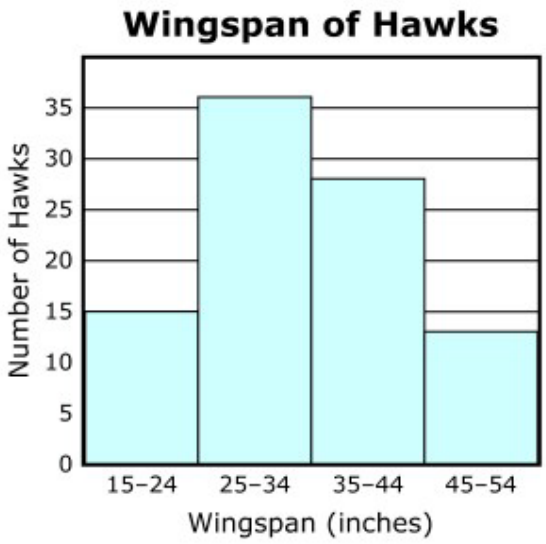
Enter your answer and your work or explanation in the space provided.

19. **1344-M21110**

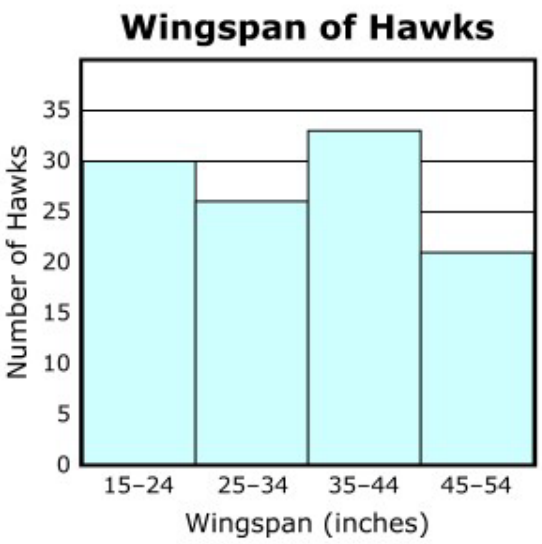
Part A

The wingspan of a hawk is the distance from the end of one spread-out wing to the end of the other spread-out wing. A scientist measured the wingspans of a random sample of hawks at a national park. Based on the median wingspan of the sample, the scientist estimates that the median wingspan of all hawks in the national park is 40 inches. Which graph **most likely** represents the data from the scientist's sample?

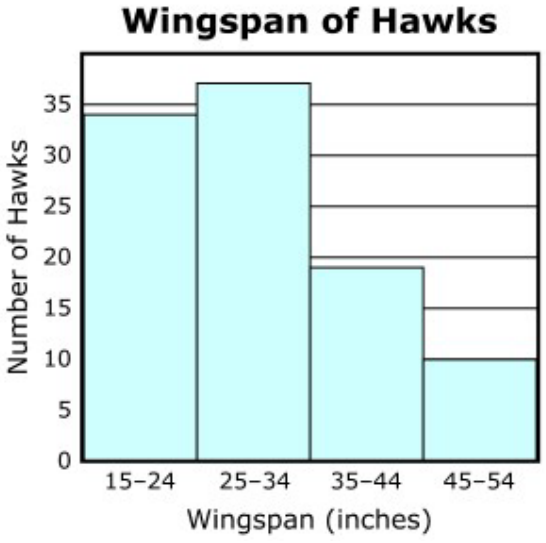
A.



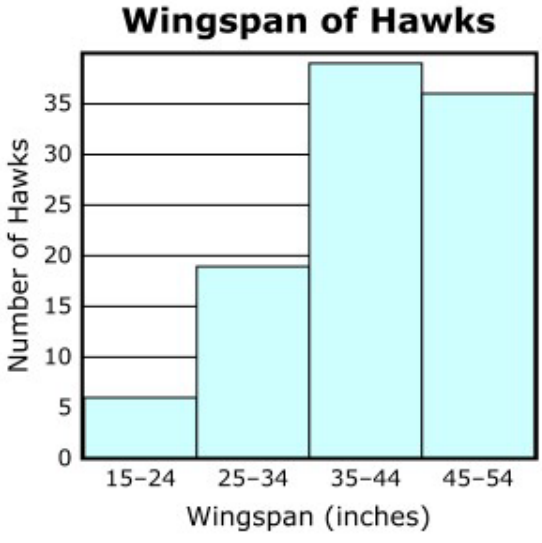
C.



B.



D.



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19. (continued from previous page) **1344-M21110**

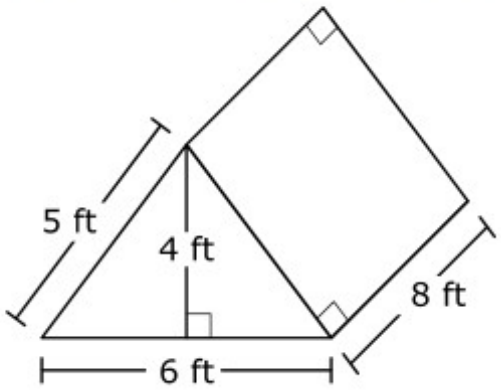
Part B

The scientist measured the wingspans of another random sample of hawks in the national park. There were 100 hawks in the sample, and the number of hawks in the park is about 2,750. There were 82 hawks in the random sample that had a wingspan less than 50 inches. Which value **best** estimates the number of hawks in the national park that have a wingspan less than 50 inches?

- A. 1,400
- B. 1,800
- C. 2,250
- D. 3,350

20. **VF643185**

This diagram shows the shape and dimensions of a tent.



Part A

What is the volume, in cubic feet, of the tent?

Enter your answer in the box.

Part B

The tent has a rectangular base that lies on the ground. What is the total surface area, in square feet, of the tent, including the base?

Enter your answer in the box.

21. **1319-M21505**

The table shows the cost of renting a boat for different amounts of time.

Boat
Rental Costs

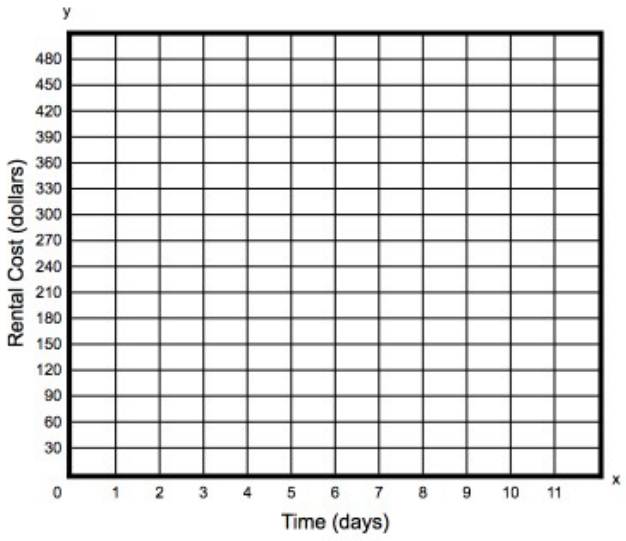
Time (days)	Rental Cost (dollars)
0	0
	120
3	180
5	300
8	

Part A

Determine the missing values in the table, and plot the five data points on the coordinate plane.

Select a location on the graph to plot each point.

Boat Rental Costs



Part B

Write an equation to represent the total cost of renting a boat, y, for x days.

Enter your equation in the box. Enter **only** your equation.

(continues on next page)

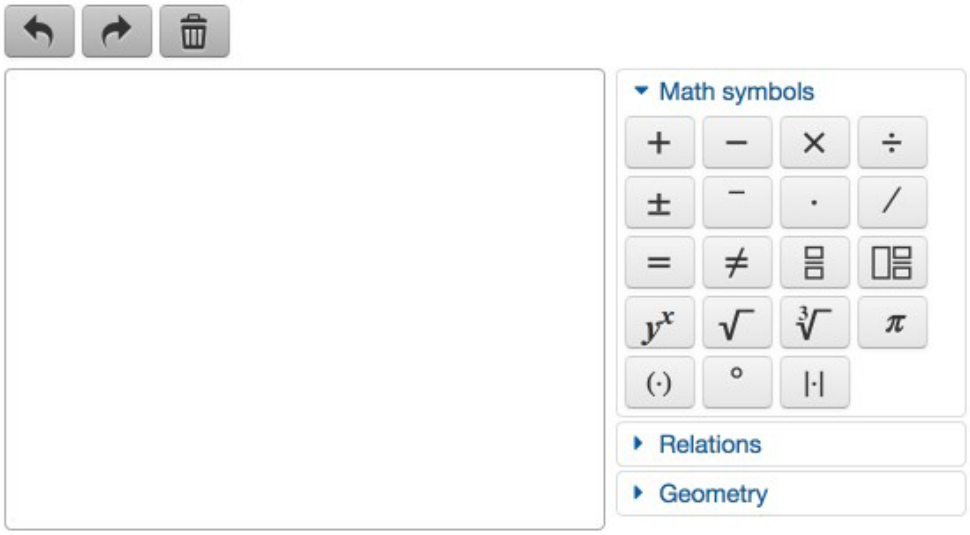
21. (continued from previous page) 1319-M21505

Part C

The boat rental company gave a rowing team a discount of $10 off for every 4 days of rental. The team rented a boat for 12 days. Their coach paid 35% of the total discounted rental cost. The remaining rental cost was divided equally among the 15 team members.

- Determine the total cost for the team to rent a boat.
- Determine the cost per team member.

Enter your answers and your work or explanation in the space provided.



22. M20841

The table shows the number of pages a student reads and how many minutes it takes the student to read those pages.

Number of Pages Read

Number of Pages	Number of Minutes
4	9.0
6	13.5
8	18.0

Which statement best describes the relationship in the table?

A. The number of minutes is proportional to the number of pages, with a unit rate of 1.5 minutes per page.

B. The number of minutes is proportional to the number of pages, with a unit rate of 2.25 minutes per page.

C. The number of minutes is proportional to the number of pages, with a unit rate of 4.5 minutes per page.

D. The relationship in the table is not proportional.

23. **VH049376**

Jackie wrote the expression shown.

$$\frac{2}{3}\left(\frac{3}{5}-\frac{3}{4}\right)+\frac{1}{2}\div\frac{1}{4}$$

Part A

Which computation can be performed first to determine the correct value of this expression?

- o A. $\frac{2}{3}+\frac{3}{5}$
- o B. $\frac{3}{5}-\frac{3}{4}$
- o C. $\frac{3}{4}+\frac{1}{2}$
- o D. $-\frac{3}{4}+\frac{1}{2}$

Part B

Jackie made an error when trying to determine the value of the expression.

Here are the steps she used.

$$\frac{2}{3}\left(\frac{3}{5}-\frac{3}{4}\right)+\frac{1}{2}\div\frac{1}{4}$$

Step 1: $\frac{2}{3}\left(-\frac{3}{20}\right)+\frac{1}{2}\div\frac{1}{4}$

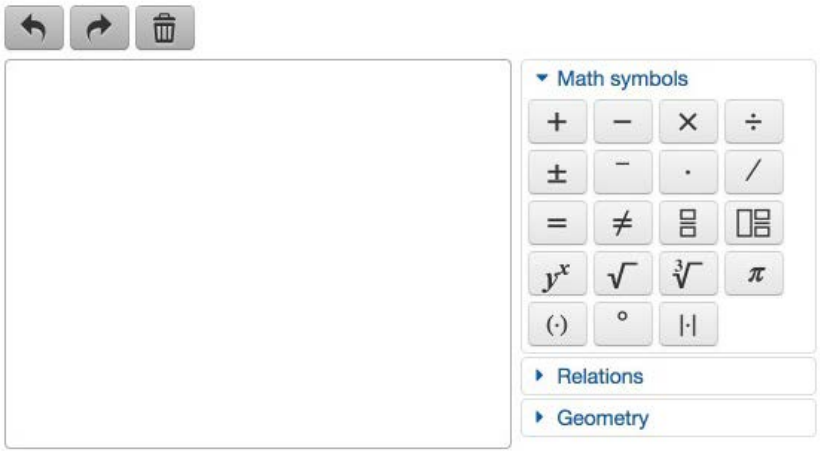
Step 2: $-\frac{1}{10}+\frac{1}{2}\div\frac{1}{4}$

Step 3: $-\frac{1}{10}+\frac{1}{8}$

Step 4: $\frac{1}{40}$

Describe the error that Jackie made.

Enter your description of the error in the space provided.



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23. (continued from previous page) **VH049376**

Part C

Determine the correct value of the expression. Be sure to show all of the steps you used. Enter your answer and your work in the space provided.