

Ratios and Proportional Relationships

Common Core MCC.7.RP

Set 2: Patterns and Relationships**Station 1**

You will find some toothpicks at this station. Use them to help you with this activity.

Here are several stages of a pattern made from toothpicks.

Stage 1**Stage 2****Stage 3**

Work with other students to build the pattern from toothpicks.

Then work together to answer the following questions. When everyone agrees on an answer, write it in the space provided.

1. How many toothpicks do you need to make Stage 4 and Stage 5? _____

2. Predict the number of toothpicks you would need to make Stage 10. _____

3. Explain how you made this prediction. _____

4. Describe a rule for the pattern. That is, if you are given the stage of the pattern, describe a rule for finding the number of toothpicks needed.

NAME: _____

Expressions and Equations
Set 3: Solving Equations

Common Core MCC.7.EE

Station 1

At this station, you will find a set of cards with the following equations written on them:

$8 + x = 12$ $\frac{x}{4} = 2$ $6x = 18$ $x - 4 = 2$ $14 = 7x$ $2 = \frac{x}{6}$

You will also find a set of cards with the following values of x written on them:

$x = 2$ $x = 3$ $x = 4$ $x = 6$ $x = 8$ $x = 12$

Work with other students to match each equation with its solution.

Work together to check that each equation is paired with its correct solution. Write the pairs below.

Explain the strategies you used to match up the cards.

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Set 2: Patterns and Relationships

Station 2

At this station, you will explore a pattern based on prices.

A gym posts this table at the front desk. It shows the cost of joining the gym for different numbers of months.

Number of months	1	2	3	4	5
Cost of membership	\$32	\$44	\$56	\$68	\$80

Work together to answer the following questions. When everyone agrees on an answer, write it in the space provided.

1. Predict the cost of joining the gym for 6 months and for 7 months. _____

2. Explain how you made these predictions. _____

3. Janelle has \$140 to spend on a membership to this gym. For how many months can she join?

4. Explain how you found the answer to Question 3. _____

5. Describe the pattern in the table. _____

NAME: _____

Expressions and Equations

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Set 3: Solving Equations

Station 2

You can use algebra tiles to help you solve equations.

Each square yellow tile shows +1. Each square red tile shows -1. Each rectangular yellow tile shows x . You use the equation mat to show the two sides of an equation.

Work together to use algebra tiles to show each equation. Then use the tiles to solve each equation. Write the value of x for each equation below.

1. $x + 5 = 8$ _____

2. $9 = x + 3$ _____

3. $4 + x = 6$ _____

4. $3x = 6$ _____

5. $2x = 12$ _____

6. $9 = 3x$ _____

Explain at least two strategies you used to solve the equations using algebra tiles.

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Set 2: Patterns and Relationships

Station 3

At this station, you will explore a pattern based on a table of data.

Diego collects baseball cards. Each week, he buys some new cards. He starts with 23 cards in his collection the first week. The table below shows the number of cards in Diego's collection each week.

Week	1	2	3	4	5
Number of cards	23	31	39	47	55

Work together to answer the following questions. When everyone agrees on an answer, write it in the space provided.

1. Predict the number of cards in Diego's collection on the 9th week. _____

2. Explain how you made this prediction. _____

3. How many weeks will it take Diego to have more than 120 cards in his collection?

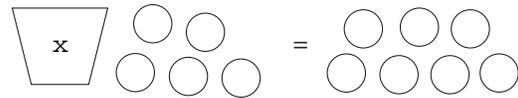
4. Explain how you found the answer to Question 3. _____

5. Describe the pattern in the table. _____

Expressions and Equations**Set 3: Solving Equations****Station 3**

In each picture, the cup is holding an unknown number of counters, x . If there is more than one cup, every cup is holding the same number of counters.

Each picture shows an equation. This picture shows $x + 5 = 7$. To make the two sides equal, there must be 2 counters in the cup. This means $x = 2$.



Work with other students to write an equation for each picture. Then find the number of counters in each cup. You can use the cups and counters at the station to help you.

1. =

Equation: _____

Solution: _____

2. =

Equation: _____

Solution: _____

3. =

Equation: _____

Solution: _____

4. =

Equation: _____

Solution: _____

NAME: _____

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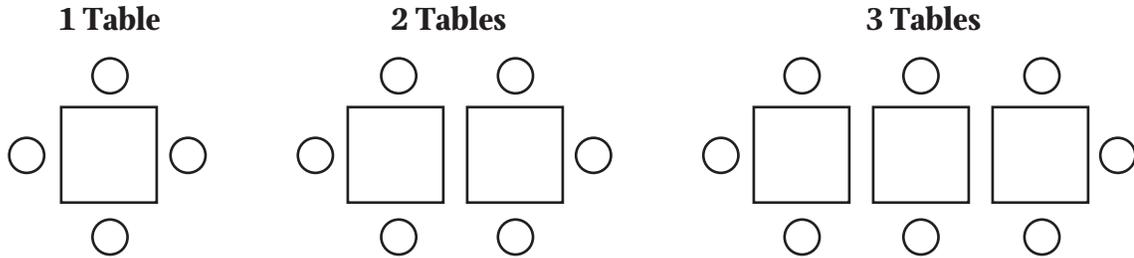
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Set 2: Patterns and Relationships

Station 4

At this station, you will find some tiles that you may use to help you analyze a pattern.

A restaurant has square tables that can be pushed together in a row to seat large groups. The figure below shows the number of chairs (circles) that are needed for various numbers of tables (squares).



Work together to answer the following questions. When everyone agrees on an answer, write it in the space provided.

1. How many chairs are needed for 4 tables? for 5 tables? _____

2. Predict the number of chairs that are needed for 12 tables. _____

3. Explain how you made this prediction. _____

4. Describe a rule for the pattern. That is, if you are given the number of tables, describe a rule for finding the number of chairs.

Expressions and Equations**Set 3: Solving Equations****Station 4**

At this station, you will match equations to real-world situations and then solve the equations.

Work with other students to match each situation to one of the following equations. When everyone agrees on the correct equation, write it in the space provided. Then work together to solve it.

$$\frac{x}{6} = 18$$

$$x - 6 = 18$$

$$6x = 18$$

$$x + 6 = 18$$

1. In 6 years, Rosario will be 18 years old. How old is she now?

Equation: _____

Solution: _____

2. When the students at Essex Middle School are separated into 6 equal groups, there are 18 students in each group. How many students are at the school?

Equation: _____

Solution: _____

3. Mike bought some books that cost \$6 each. He spent a total of \$18. How many books did he buy?

Equation: _____

Solution: _____

4. From 4:00 to 5:00 P.M., the temperature dropped 6°F. At 5:00 P.M. the temperature was 18°F. What was the temperature at 4:00 P.M.?

Equation: _____

Solution: _____

Explain the strategies you used to match the equations to the situations.
