# About Our Samples

The Texas STAAR Tutorials by TripleNterprises Publishing (TEP) are developed for teachers (or any tutoring instructor) and students to use in order to prepare for the STAAR exam. These materials are designed to work together. All teacher manuals contain lesson plans, answer keys and other information specific to the grade and subject being taught, while the student workbook contains all the practice tests and exercised that go with a specific lesson.

Our tutorials cover all of the standards and TEKS assessed on the STAAR exam.

For purposes of illustrating how our materials work together, this sample contains the lesson plan and transparencies for a given standard/TEK, followed by the student material associated with that lesson.

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# Texas STAAR Exam -- Lesson 4, 2.2(C)

(2.2) Number, operation, and quantitative reasoning. The student describes how fractions are used to name parts of whole objects or sets of objects. The student is expected to:

(C) use concrete models to determine if a fractional part of a whole is closer to 0, ½, or 1

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***Note*: This is a difficult lesson for second grade students. It requires that they have some knowledge of number lines, and also the concept of "1" as a whole, and not just the number "1".**

**Say**: In our last lesson, we talked about fractions. We talked about how fractions are part of a whole, we learned about numerators and denominators, and we learned how to describe parts of a whole using models and sets of objects.

Now we are going to learn how to determine if the part, or fraction, of a whole is closer to 0, $\frac{1}{2}$, or 1. We will use models to help us learn how to do this.

Put lesson slide 1 on the overhead / white board.

Read lesson slide 1

**Say**: Now that we understand the meaning of 0, $\frac{1}{2}$, and 1, let's look at how we can determine which of these a given fraction is closer to.

Put lesson slide 2 on the overhead / white board.

Read lesson slide 2

**Say**: Now let's look at another example and see if we can solve it together.

Put lesson slide 4 on the overhead / white board.

Read lesson slide 4

**Say**: Do STAAR Practice 2.2C

**Lesson 4: Lesson slide #1**

## 0, $\frac{1}{2}$, or 1?

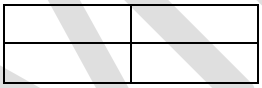
A fraction is part of a whole object. If an object is broken into 8 equal parts, one part of the object is 1 out of 8, or $\frac{1}{8}$.

To determine whether a fractional part is closer to 0, $\frac{1}{2}$, or 1, we need to understand how these numbers relate to each other. Let's look at a definition of each:

| | | |
|---|---|---|
| *Zero* | *0* | *None* |
| *One* | *1* | *A whole, the entire object or set of objects* |
| *One half* | $\frac{1}{2}$ | *One of two equal parts of a whole object or set of objects* |

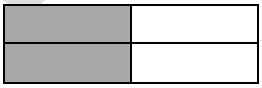
Let's look at a model to see what these mean. First, let's look at zero (0).

The model below shoes 0 squares shaded:



This means there are ***no*** shaded squares in the model.

The model below shows $\frac{1}{2}$ of the squares in the model below are shaded:



The term $\frac{1}{2}$ means that there is the same number of shaded squares as there are squares that are not shaded. In this model, we have two shaded squares and two squares that are not shaded.

The model below shows the whole model is shaded:

This means the entire model, or the whole model, is shaded. Since this is the whole we refer to it as 1.

**Lesson 4: Lesson slide #2**

## Closer to 0, $\frac{1}{2}$, or 1?

To determine if a fraction is closer to 0, $\frac{1}{2}$, or 1, we will use some models as examples:

**Example 1:**
Are the number of shaded squares closer to 0, $\frac{1}{2}$, or 1?

| | | |
|---|---|---|
| | | |

**Solution strategy:**
To solve this problem, we need to first count the total number of squares. In the model above, we have 6 squares.

Next, we need to count the number of shaded squares. In the model above, we have 2 shaded squares.

Now we have to determine how many squares would equal $\frac{1}{2}$ of the squares. This means, how squares can fit into two equal size groups. Let's do this by numbering the squares like this:

| | | |
|---|---|---|
| *1* | *2* | *3* |
| *1* | *2* | *3* |

We started our numbering in the top square on the left. Then we numbered the square below it with the same number. Now we count number the square next to the first "1" with a "2", and we do the same for the square below it. Finally, we put a "3" in the last square in the first row, and we do the same with the square below it.

Now we have two equal groups of 3 squares. This means that "3" is one-half of the total squares.

Now that we know what $\frac{1}{2}$ of the squares is, we can determine if the shaded squares are closer to 0, $\frac{1}{2}$, or 1.

**Continue to lesson slide 3**

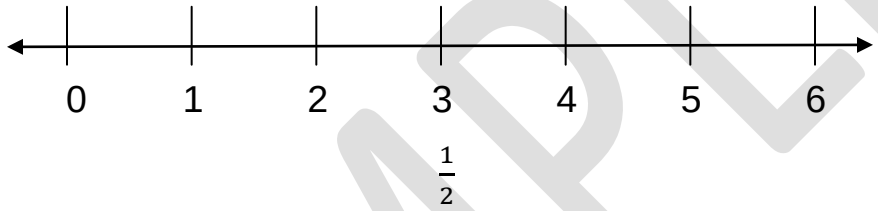
**Lesson 4: Lesson slide #3**

## Closer to 0, $\frac{1}{2}$, or 1? *Continued*

| *1* | *2* | *3* |
|---|---|---|
| *1* | *2* | *3* |

In the model above, we have 2 shaded squares. We need to determine if this is closer to 0, $\frac{1}{2}$, or 1 (the whole). Remember, a fraction with a numerator and denominator that are the same is equal to 1. For example, $\frac{6}{6}$ = 1, or the whole. This fraction means 6 out of 6 parts.

Let's use a number line that shows the numerator of each of the six parts:




Each number on the number line equals a part of the whole. We know that there are six parts, and we know there are two equal halves of three equal parts. So the number "3" on the number line is equal to $\frac{1}{2}$.

Now we can compare the shaded parts, 2, to 0, $\frac{1}{2}$, and 1.

Is 2 closer to 0 or to 3 on the number line? The 2 is one space away from 3, but 2 spaces away from 0. Therefore, 2 is closer to 3 (or $\frac{1}{2}$), than it is to 0.

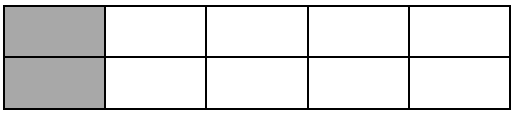
Now look at how far "2" is from "6". "2" is 4 places away from "6", so that means 2 is closer to "3".

Based on this, we know that 2 out of 6, or $\frac{2}{6}$, is closer to $\frac{1}{2}$ than it is to 0 or to $\frac{6}{6}$ (the whole).

**Lesson 4: Lesson slide #4**

**Example 2:**

Are the number of shaded squares closer to 0, $\frac{1}{2}$, or 1?



**Solution Strategy:**

First, count the total number of squares. There are 10 squares.

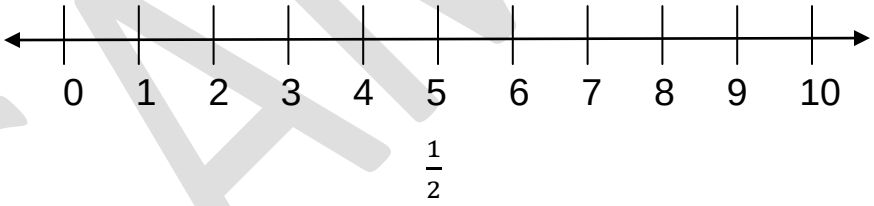
Next, count the number of shaded squares. There are 2 shaded squares.

Now, number the squares to determine how many squares equal $\frac{1}{2}$:

| | | | | |
|---|---|---|---|---|
| *1* | *2* | *3* | *4* | *5* |
| *1* | *2* | *3* | *4* | *5* |

By numbering the squares, we see that $\frac{1}{2}$ is equal to 5 out of 10, or $\frac{5}{10}$.

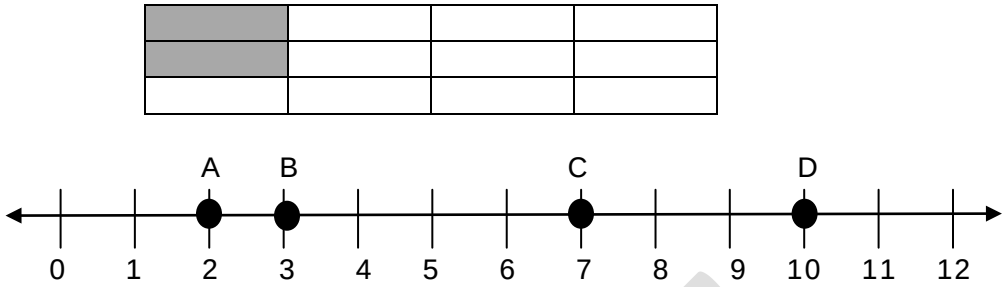
Now let's use a number line:




Looking at the number line, we can see that "2" is closer to "0" than it is to "5" ($\frac{1}{2}$) or to "10" (1, or the whole).

**STAAR Practice 2.2(C)**

**1** Which point on the number line below shows the number of shaded squares?




**A** A

**B** B

**C** C

**D** D

**2** Using the model from question 1, which number below represents $\frac{1}{2}$ of the total squares?

**A** 3

**B** 6

**C** 9

**D** 12

**3** In questions 1 above, is point A closer to 0, $\frac{1}{2}$, or 1 (the whole)?

**A** 0

**B** $\frac{1}{2}$

**C** 1

**4** In questions 1 above, is point C closer to 0, $\frac{1}{2}$, or 1 (the whole)?

**A** 0

**B** $\frac{1}{2}$

**C** 1

**5** In questions 1 above, is point D closer to 0, $\frac{1}{2}$, or 1 (the whole)?

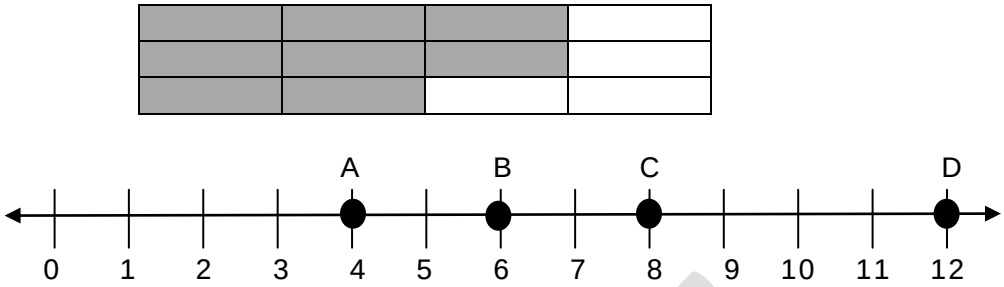
**A** 0

**B** $\frac{1}{2}$

**C** 1

**STAAR Practice 2.2(C)** *continued*

**6** Which point on the number line below shows the number of shaded squares?




**A** A

**B** B

**C** C

**D** D

**7** Using the model from question 6, which number below represents $\frac{1}{2}$ of the total squares?

**A** 3

**B** 6

**C** 9

**D** 12

**8** In questions 6 above, is point A closer to 0, $\frac{1}{2}$, or 1 (the whole)?

**A** 0

**B** $\frac{1}{2}$

**C** 1

**9** In questions 6 above, is point C closer to 0, $\frac{1}{2}$, or 1 (the whole)?

**A** 0

**B** $\frac{1}{2}$

**C** 1

**10** In questions 6 above, is point D closer to 0, $\frac{1}{2}$, or 1 (the whole)?

**A** 0

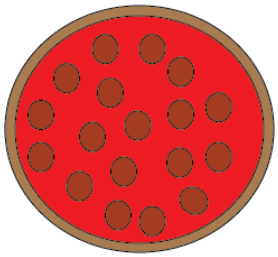
**B** $\frac{1}{2}$

**C** 1

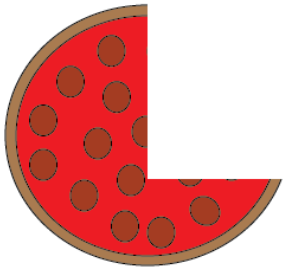
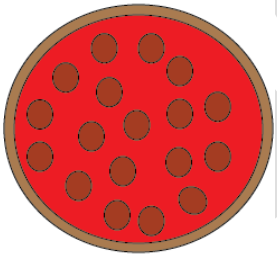
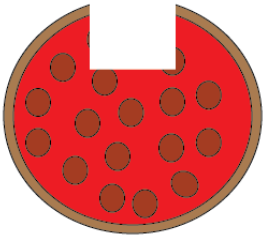
**STAAR Manipulative 2.2(C)**

## Who's Eating the Pizza!!

**Each pizza below started out like this one:**



**For each of the pizzas below, mark whether it is closer to 1, $\frac{1}{2}$, or 0 of the original pizza:**

| | | | | |
|---|---|---|---|---|
| **1** |  | **1** | $\frac{1}{2}$ | **0** |
| **2** |  | **1** | $\frac{1}{2}$ | **0** |
| **3** |  | **1** | $\frac{1}{2}$ | **0** |
| **4** |  | **1** | $\frac{1}{2}$ | **0** |
| **5** |  | **1** | $\frac{1}{2}$ | **0** |

# Texas STAAR Exam -- Lesson 9, 2.4(A)

(2.4) Number, operation, and quantitative reasoning. The student models multiplication and division. The student is expected to:

(A) model, create, and describe multiplication situations in which equivalent sets of concrete objects are joined;

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**Say**: So far, we have been doing number operations in addition and subtraction. Today we are going to learn how to multiply. Multiply means to increase something by a fixed number. In other words, say we have two pencils and we want to have 2 times that number of pencils. We would multiply our two pencils by 2 and get 4 pencils. Let's see how this works.

Put lesson slide 1 on the overhead / white board.

Read lesson slide 1

**Say**: Now that we have an idea of how multiplication works, let's look at how we write multiplication problems.

Put lesson slide 3 on the overhead / white board.

Read lesson slide 3

**Say**: Do STAAR Practice 2.4(A) and STAAR Manipulative 2.4(A)

**Lesson 9: Lesson slide #1**

## Multiplication Using Models

To multiply means to increase something by a fixed number, called a factor. Let's look at some multiplication examples using objects.

**Example 1:**
We have 2 pencils. If we multiply our pencils by 2, how many pencils will we have?

**Solution Strategy:**
First, let's look at what we have:

2 pencils

Now we are going to make 2 sets of two pencils. This means we multiplied the pencils by two:

Now, count how many pencils we have. We count 4 pencils.

**This means if we multiply 2 pencils by a factor of 2, we get 4 pencils.**

**Continue to lesson slide 2**

**Lesson 9: Lesson slide #2**

## Multiplication Using Models *continued*

**Example 2:**
Multiply 3 tennis balls by a factor of 4.

**Solution Strategy:**
First, we look at the figure of 3 tennis balls:

To multiply this group of tennis balls by 4, we create four sets of 3 tennis balls each:

Now we have multiplied our three tennis balls by a factor of 4.

We count the tennis balls and determine that we have 12 tennis balls.

**Therefore, 3 tennis balls times 4 equals 12 tennis balls.**

**Lesson 9: Lesson slide #3**

## Multiplication Using Models - Writing Multiplication Sentences

We have used models to show how multiplication works. Now let's look at our last example and show how we write a multiplication sentence.

**Example 3:**
Multiply 3 tennis balls by a factor of 4.

**Solution Strategy:**
First, we look at the figure of 3 tennis balls:

To multiply this group of tennis balls by 4, we create four sets of 3 tennis balls each:

And our multiplication sentence is now:

3 tennis balls $\times$ 4 sets of tennis balls $=$ 12 tennis balls.

**In other words: $3 \times 4 = 12$**

**Continue to lesson slide 4**

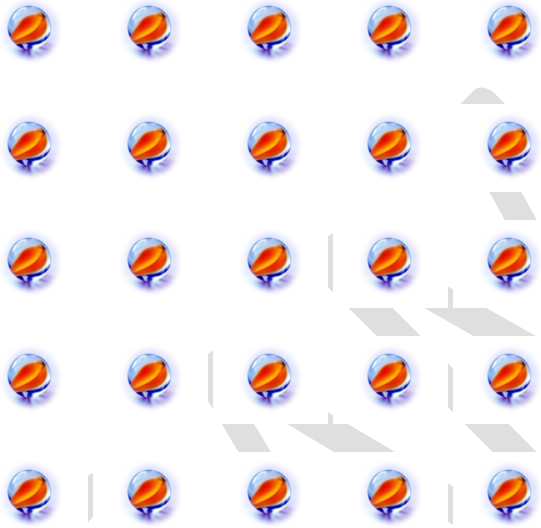
**Lesson 9: Lesson slide #4**

## Multiplication Using Models - Writing Multiplication Sentences

**Example 4:**
John wants to give each of his 5 friends five marbles. How many marbles will John need? Write a number sentence for this problem.

**Solution Strategy:**
First, make a group of 5 marbles:

Since each friend is getting five marbles, we now make a total of 5 sets of 5 marbles:



Set 1

Set 2

Set 3

Set 4

Set 5

Now, count the marbles. **We get 25 total marbles.**

Our number sentence looks like this:

5 marbles $\times$ 5 sets of marbles $=$ 25 marbles, or:

$$\mathbf{5 \times 5 = 25}$$

**STAAR Practice 2.4(A)**

**1** How many pencils would there be if 3 students each had the same number of pencils shown below?

**A** 3

**B** 5

**C** 10

**D** 15

**2** Which number sentence correctly describes the problem in question 1?

**A** $5 \times 1 = 5$

**B** $5 \times 2 = 10$

**C** $5 \times 3 = 15$

**D** $5 \times 4 = 20$

**3** If four basketball players each have 2 basketballs, how many basketballs do they have in total?

**A** 8

**B** 10

**C** 12

**D** 14

**4** Write a number sentence for question 3 below -

_____ × _____ = _____

**STAAR Practice 2.4(A)** *continued*

**5** Which number sentence describes the model below?

**A** $2 \times 3 = 6$

**B** $3 \times 3 = 9$

**C** $2 \times 3 = 9$

**D** $3 \times 3 = 6$

**6** If Mary and three of her friends each have 3 bows, how many bows do they all have together?

**A** 12

**B** 9

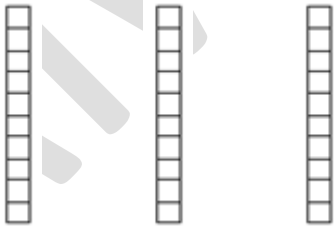
**C** 6

**D** 3

**7** Write the number sentence that describes problem 6 -

_____ × _____ = _____

**8** Which number sentence describes the model below?



**A** $1 \times 3 = 3$

**B** $3 \times 3 = 9$

**C** $3 \times 10 = 30$

**D** $10 \times 4 = 40$

**9** If six students each have 3 erasers, how many erasers do the students have all together?

**A** 18

**B** 9

**C** 6

**D** 3

**10** Which number sentence correctly describes problem 9?

**A** $6 \times 6 = 36$

**B** $6 \times 3 = 18$

**C** $3 \times 3 = 9$

**D** $1 \times 18 = 18$

**11** If 7 students each have 2 toy cars, how many toy cars do they have all together?

**A** 2

**B** 7

**C** 9

**D** 14

**12** Jose's class has 6 boys. If each boy has three sports cards, how many sports cards do they have all together?

**A** 24

**B** 18

**C** 12

**D** 6

**STAAR Manipulative 2.4(A)**

**3 Group - 2 Group -1 Group and Less Groups!!**

**Draw groups of each item listed below. Write your answer in the space provided.**

| | |
|---|---|
| **1** *Draw 3 groups of 4 tennis balls* | ***How many tennis balls are there?*** |
| **2** *Draw 5 groups of 4 marbles* | ***How many marbles are there?*** |
| **3** *Draw 2 groups of 7 bows* | ***How many bows are there?*** |
| **4** *Draw 6 groups of 3 stars* | ***How many stars are there?*** |
| **5** *Draw 9 groups of 3 cups of lemonade* | ***How many cups of lemonade are there?*** |