

## **Grade: 4**

### **Enduring Skill 1:**

**Interpret a multiplication equation as a comparison, e.g., interpret  $35 = 5 \times 7$  as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.**

#### **Demonstrators:**

1. Interpret a multiplication equation as a comparison, e.g., interpret  $35 = 5 \times 7$  as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.
3. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
4. Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.
5. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue this way.
6. Recognize that in a multi digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example,  $700/70 = 10$  apply concepts of place value and division.

7. Read and write multi-digit whole numbers using base ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meaning of the digits in each place, using  $<$ ,  $>$ , and  $=$  symbols to record the results of comparisons.
8. Use place value understanding to round multi-digit whole numbers to any place.
9. Fluently add and subtract multi-digit whole number using the standard algorithm.
10. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of the operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
11. Find the whole-number quotients and remainders with up to four-digit dividends and one digit divisors, using strategies based on place value the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculations by using equations, rectangular arrays, and/or area models.

**Related Standards:**

1. 4OA1
2. 4OA2
3. 4OA3
4. 4OA4
5. 4OA5
6. 4NBT1
7. 4NBT2
8. 4NBT3
9. 4NBT4
10. 4NBT5
11. 4NBT6

**Assessment Items:**

1. **ES 1, Demonstrator 3, Standard 4.OA.3** Inside Mathematics  
Bikes and Trikes

The cycle shop on Main Street sells bicycles and tricycles.

- A. Yesterday, Sarah counted all of the cycles in the shop.  
There were seven bicycles and four tricycles in the shop.  
How many wheels were there on these eleven cycles? \_\_\_\_\_

Show your work.

Explain your reasoning.

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- B. Today, Sarah counted all of the wheels of all of the cycles in the shop.  
She found that there were 30 wheels in all.  
There were the **same number** of bicycles as there were tricycles.  
How many bicycles were there? \_\_\_\_\_ How many tricycles were there?  
\_\_\_\_\_

Show your work.

Explain your reasoning.

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**2. ES 1, Demonstrator 11, Standard 4.NBT.6** Common Core Coach

A bus has 12 rows of seats. Each row can fit 6 passengers. Mr. Smith ordered 5 buses to take people to a football game.

$12 \times 6 \times 5 = \underline{\hspace{2cm}}$

- A. Show one way to use the commutative property of multiplication. Write your answer on the following line.

\_\_\_\_\_

- B. Use the associative property of multiplication to group the factors. Write your answer on the following line.

\_\_\_\_\_

- C. What is the total number of passengers Mr. Smith can take to the football game?

Show your work.

Explain your reasoning.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. ES 1, Demonstrator 6, Standard 4.NBT.1 Pearson

The odometer in Mrs. Nolan's car is shown below.

5	8	1	6	2
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What will the odometer show after she has traveled 100 more miles?

- A. 58,163
- B. 58,262
- C. 59,162
- D. 68,162

4. ES 1, Demonstrator 9, Standard 4.NBT.4 Pearson

Beth read a 92-page book over a 3-day weekend. She read 25 pages on Friday and 47 pages on Saturday. How many pages did she read on Sunday? Which model represents the problem?

A.

92		
25	47	?

B.

?		
92	47	25

C.

25 + ?	
92	47

D.

92	25
47	?

**5. ES 1, Demonstrator 6, Standard 4.NBT.1** Common Core Coach

Mrs. Wilson’s class learned that it takes approximately 66 days for an alligator egg to hatch. In the number 66 how does the 6 in the tens place compare to the 6 in the ones place?

- A. It represents 6 times as much.
- B. It represents 10 times as much.
- C. It represents 60 times as much.
- D. It represents the same total.

**6. ES 1, Demonstrator 6, Standard 4.NBT.1** Common Core Coach

Fiona purchased 5,500 paper clips. Fred says the 5 in the thousands place is 10 times greater than the 5 in the hundreds place. Jeff says the 5 in the thousands place is 100 times greater than the 5 in the hundreds place. Who is correct?

Who is correct? Explain and use models or drawings to show your answer.

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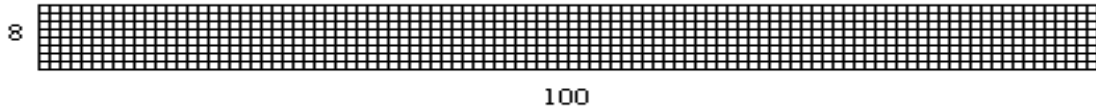
**7. ES 1, Demonstrator 2, Standard 4.OA.2** Common Core Coach

Rachel is making fruit punch for a party. The recipe calls for 22 cups of orange juice, 12 cups of apple juice, and 6 cups of pineapple juice. If each guest drinks 3 cups of punch, how many guests will the recipe serve?

- A. 13 cups
- B. 12 cups
- C. 14 cups
- D. 11 cups

**8. ES 1, Demonstrator 10, Standard 4.NBT.5** Pearson

Which equation shows the number of squares in the array?



- A.  $8 \times 10 = 80$
- B.  $8 + 10 = 18$
- C.  $8 + 100 = 108$
- D.  $8 \times 100 = 800$

**9. ES 1, Demonstrators 3 & 11, Standard 4.OA.3 & 4.NBT.6** Illustrative Mathematics

Jillian says:

I know that 20 times 7 equals 140 and if I take away 2 sevens that leaves a difference of 126. So 126 divided by 7 = 18.

- a. Is Jillian's calculation correct? Explain.
- b. Draw a picture showing Jillian's reasoning.
- c. Use Jillian's method to find 222 divided by 6.

**10. ES 1, Demonstrator , Standard: 4.OA.3** Illustrative Mathematics

Every year a carnival comes to Hallie's town. The price of tickets to ride the rides has gone up every year. Use the chart below to answer the following questions.

Year	Ticket Price
2008	\$2.00
2009	\$2.50
2010	\$3.00
2011	\$3.50
2012	\$4.00

- a. In 2008, Hallie's allowance was \$9.00 a month. How many carnival tickets could she buy with one month's allowance?
- b. How much more did a carnival ticket cost in 2012 than it did in 2008?
- c. What would Hallie's allowance need to be in 2012 in order for her to be able to buy as many carnival tickets as she could in 2008?

**11. ES 1, Demonstrator 5, Standard 4.OA.5** Illustrative Mathematics

Rosa wrote a pattern using the rule “subtract 7.” The first two numbers in her pattern were 83 and 76. Which number below is part of Rosa’s pattern?

- A. 41
- B. 49
- C. 57
- D. 61

**12. ES 1, Demonstrator 1, Standard: 4.NBT.6** Common Core Coach

Sixteen adults and 40 students attended a charity event. The adults and students sat at 8 tables.

- A. Each table had the same number of adults. How many adults sat at each table?
- B. Each table had the same number of students. How many students sat at each table?
- C. How many people in all sat at each table? Show your work.

**13 ES 1, Demonstrator 6 Standard 4.NBT.1** Engage NY

In the number below, how many times greater is the number represented by the digit in the thousands place than the number represented by the digit in the hundreds place? **57,762**

- a. 1
- b. 10
- c. 100
- d. 1,000



**14. ES 1, Demonstrators 3 & 11, Standard 4.OA.3 & 4.NBT.4** Common Core Coach

A toy company made \$27,358 from selling game consoles. It also made \$3,725 from video games and \$8,440 from board games.

- A. How much more did the company make from board games than from video games? Show your work.
- B. How much more did the company make from game consoles than from video and board games combined? Explain how you got your answer.

**15. ES 1, Demonstrator 11, Standard 4.NBT.6** Engage NY

A group of 6 people at an elementary school donated a total of \$1,890 to a town to fix up the school's playground. Each person donated the same amount. How much money did each person donate?

- A. \$310
- B. \$315
- C. \$312 R 3
- D. \$311 R 1

16. ES 1, Demonstrator 10, Standard 4.NBT.5

Common Core Coach

A manatee, or sea cow, eats as much as 112 pounds of water plants in one day. At this rate, how many pounds of food could a manatee eat in one week?

- A. 112 lb
- B. 560 lb
- C. 784 lb
- D. 1120 lb

17. ES 1, Demonstrators 10 & 3, Standard 4.NBT.5 & 4.OA.3

The table below shows the numbers of tickets sold at a movie theater on Friday.

**NUMBER OF TICKETS SOLD**

Day	Adult Tickets	Children's Tickets
Friday	976	1,678
Saturday		

The number of each type of ticket sold on Saturday is described below.

- Adult tickets—2 times as many as the number of adult tickets sold on Friday
- Children's tickets—3 times as many as the number of children's tickets sold on Friday

Complete the table above to show the numbers of tickets sold on Saturday.

What is the total number of tickets sold over these two days?

**Show your work.**

18. ES 1, Demonstrator 7, Standard 4.NBT.2

124040614\_3

4 thousands + 3 tens + 5 hundreds is less than which number below?

- A 4 thousands + 5 tens + 3 hundreds
- B 8 hundreds + 3 thousands + 8 ones
- C 4 thousands + 7 ones + 8 tens + 6 hundreds
- D 9 hundreds + 9 tens + 2 thousands

19. ES 1, Demonstrator 1, Standard 4.OA.1

134040011\_4

Which statement is represented by the equation below?

$$15 \times 5 = 75$$

- A The number 15 is 5 less than 75.
- B The number 15 is 5 times as many as 75.
- C The number 75 is 15 more than 5.
- D The number 75 is 5 times as many as 15.

**20. ES 1, Demonstrator 10 & 3. Standard 4.NBT.5 & 4.OA.3**

A grocery store had cans of soup on 7 different shelves. The bottom 4 shelves Each had 29 cans. The top 3 shelves each had 42 cans. What was the total number of cans on the shelves? Show your work below.

Answer \_\_\_\_\_ cans of soup.

A large empty rectangular box with a black border, intended for the student to show their work for solving the problem.

## **Grade 4**

### **Enduring Skill 2:**

**Develop an understanding of fraction equivalence and how to perform operations and solve problems incorporating the 8 math practices where appropriate.**

#### **Demonstrators:**

1. Develop understanding of fraction equivalence and operations with fractions.
2. Develop methods for generating and recognizing equivalent fractions.
3. Use understanding of fractions to compose and decompose fractions from unit fractions.
4. Understand decimal notation for fractions and compare decimal fractions.
5. Use understanding of fractions and multiplication to multiply a fraction by a whole number.

#### **Related Standards:**

1. 4.NF.1
2. 4.NF.2
3. 4.NF.3
4. 4.NF.4
5. 4.NF.5
6. 4.NF.7

**Assessment Items:**

**1. ES 2, Demonstrator 1, Standard 4.NF.2**

Sarah and Josh are eating pizza for lunch. Sara has eaten  $\frac{1}{4}$  of the pizza while Josh has eaten  $\frac{1}{3}$  of the pizza. Sara believes she has eaten more pizza than Josh.

A. Is Sara correct? Explain your thinking and show all your work.



**2. ES 2, Demonstrator 3, Standard 4.NF.2**

Create a number line and label it with the benchmark fractions 0,  $\frac{1}{2}$ , and 1. Use the number line to order the following fractions:  $\frac{9}{10}$ ,  $\frac{1}{8}$ , and  $\frac{4}{6}$ .



**3. ES2, Demonstrator 1, Standard 4.NF.2**

Mrs. Chad has asked her students to compare the following fractions using the correct symbol  $<$ ,  $>$ , or  $=$ .

$$\frac{5}{6} \bigcirc \frac{1}{2}$$

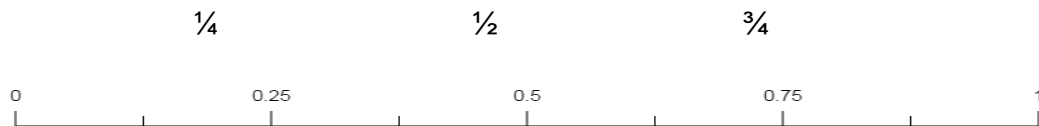
- A. Which symbol correctly compares the two fractions?
- B. Explain how you found your answer.

**4. ES 2, Demonstrator 1, Standard 4.NF.2**

- A. Draw a diagram showing  $\frac{2}{3}$  and another showing  $\frac{5}{6}$  .
- B. How do the two fractions compare in size?
- C. Explain your thinking.

**5. ES2, Demonstrator 1, Standard 4.NF.2**

Use the number line below to compare the two fractions,  $\frac{3}{4}$  and  $\frac{8}{10}$ . Determine which fraction is greatest and explain how you determined your answer.



**6. ES2, Demonstrator 3:, Standard 4.NF.1**

Tim has  $4\frac{1}{8}$  pizzas left over from his football party. After giving some pizza to his friend, he has  $2\frac{4}{8}$  of a pizza left. Calculate how much pizza Tim gave to his friend. Show your work.



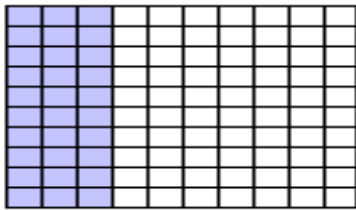
**7. ES 2, Demonstrator 2, Standard 4.NF.3**

Sam says that only one of the three following equations is incorrect. Do you agree with Sam? Explain your reasoning.

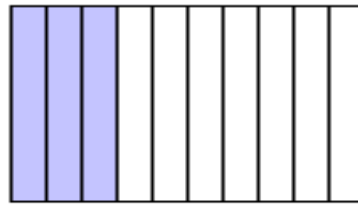
$$\frac{5}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8} \quad \frac{1}{8} + \frac{1}{8} + \frac{1}{8} = \frac{5}{8} \quad \frac{2}{8} + \frac{2}{8} + \frac{1}{8} = \frac{5}{8}$$

**8. ES 2, Demonstrator 2, Standard 4.NF.5**

Figure A and Figure B are shaded to represent a value that is less than 1 whole.



**Figure A**



**Figure B**

A. Circle all of the values below that are equivalent to figures A and B. Explain your reasoning.

30/100

3/10

0.03

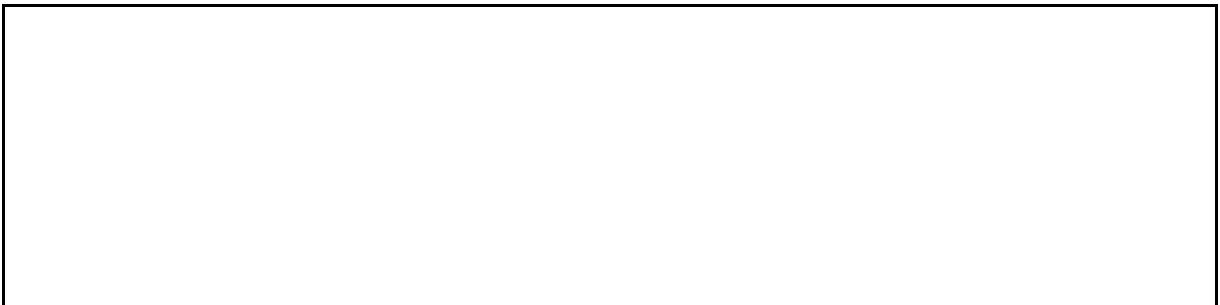
0.30

3/100

**9. ES 2, Demonstrator 3, Standard 4.NF.3**

John, Dana, and Douglas share a bedroom. They painted one wall in their bedroom. John painted  $\frac{2}{8}$  of the wall. Dana and Douglas painted the rest of the wall. Dana and Douglas painted the same amount.

- A. Use the box below to show how much of the wall each child painted. Label each section with a fraction and a child's name.



- B. Create an addition equation using the three fractions to prove the entire wall was painted.

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- C. Name three other fractions that could have been painted by John, Dana, and Douglas in order to paint the entire wall.



**10. ES2, Demonstrator 2. Standard 4.NF.2 Engage NY**

Which fraction below can be placed in the box to make the statement true?

  $> \frac{3}{4}$

- a.  $\frac{2}{6}$
- b.  $\frac{5}{12}$
- c.  $\frac{1}{2}$
- d.  $\frac{5}{6}$

**11. ES 2, Demonstrator 1, Standard 4.NF. 3a Engage NY**

Marta picked  $\frac{4}{8}$  cup of blueberries. Her sister picked  $\frac{3}{8}$  cup of blueberries. They used  $\frac{6}{8}$  cup of all the blueberries they picked to make muffins. What was the amount, in cups, left of the blueberries they picked? Show your work.

**12. ES 2, Demonstrator 1, Standard 4.MD.2 Engage New York**

- A. In September, Jerry read  $\frac{2}{5}$  of an hour every day for 20 days. How many hours did he read in September?
- B. In October, Jerry read  $\frac{4}{5}$  of an hour every day for 20 days. How many more hours did Jerry read in October than in September?

13. ES. 2, Demonstrator 1, Standard 4.NF.1

124040023\_4

Which number sentence is true?

**A**  $\frac{3}{8} < \frac{1}{4}$

**B**  $\frac{1}{2} < \frac{3}{6}$

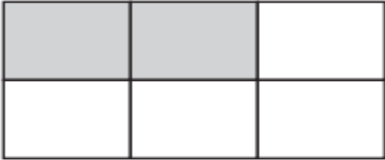
**C**  $\frac{3}{5} = \frac{8}{10}$

**D**  $\frac{2}{3} = \frac{4}{6}$

14. ES. 2, Demonstrator 2, Standard 4.NF.1

134040003\_2

The model below is shaded to represent a fraction.



Which fraction is equivalent to the one represented by the model?

**A**  $\frac{1}{6}$

**B**  $\frac{1}{3}$

**C**  $\frac{2}{4}$

**D**  $\frac{2}{3}$

**15. ES 2, Demonstrator 2, Standard 4.NF.2**

Pete painted  $\frac{4}{8}$  of a rectangle green. He painted  $\frac{1}{8}$  of the same rectangle blue. Pete painted the rest of the rectangle red. What fraction of the rectangle did Pete paint red?

\_\_\_\_\_ Answer

Show or explain how you got your answer.

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Draw a rectangle to model the amount of each color Pete used. Divide the rectangle into equal parts, and label the parts G for green, B for blue, and R for red.

## **Grade 4**

### **Enduring Skill 3:**

**Develop an understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures and symmetry incorporating the eight mathematical practices.**

#### **Demonstrators:**

1. Develop an understanding of how to describe, analyze, compare, and classify two dimensional shapes.
2. Develop understanding through building, drawing, and analyzing two dimensional shapes.
3. Develop an understanding of concepts of angle and measure angles.
4. Develop a deepened understanding of properties of two-dimensional objects and use them to solve symmetry problems.

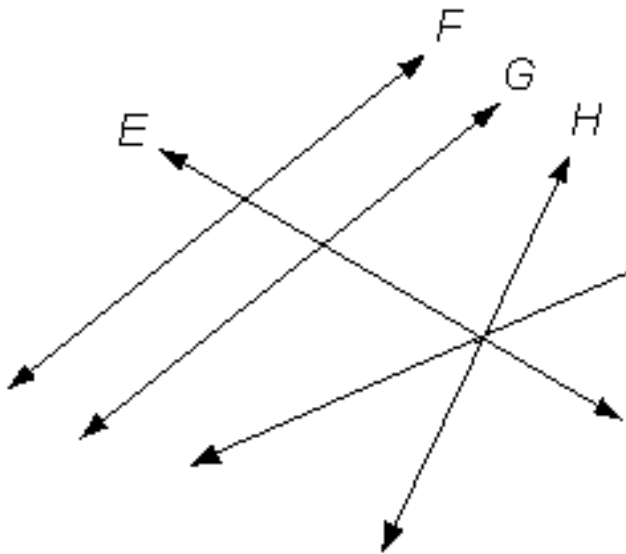
#### **Related Standards:**

1. 4.G.1
2. 4.G.2
3. 4.G.3
4. 4.MD.5ab
5. 4.MD.6
6. 4.MD.7

**Assessment Items:**

1. **ES 1, Demonstrator 1, Standard 4.G.1** Pearson

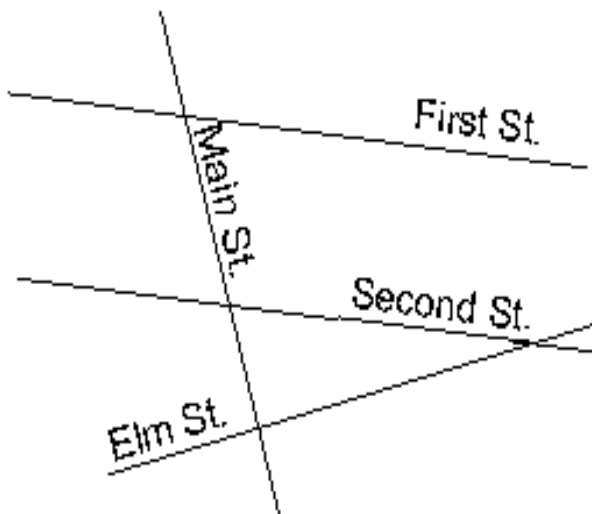
Which line is parallel to line *G*?



- A. line *E*
- B. line *F*
- C. line *H*
- D. line *J*

2. ES 3, Demonstrator 1, Standard 4.G.1 Pearson

This is part of a city map.



Which streets are perpendicular to each other?

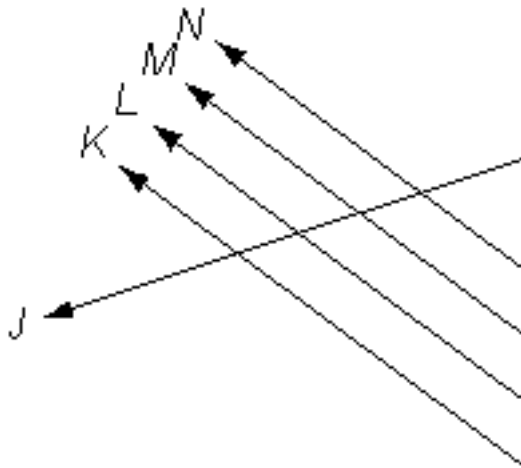
- A. Second Street and Main Street
- B. First Street and Second Street
- C. Elm Street and Main Street
- D. None of the streets are perpendicular to one another.



3. ES 3, Demonstrator 1, Standard 4.G.1

Pearson

Which line is not parallel to line  $L$ ?



- A. line  $J$
- B. line  $K$
- C. line  $M$
- D. line  $N$

4. ES 3, Demonstrator 4, Standard: 4.G.3 Pearson

Which figure is NOT a polygon?

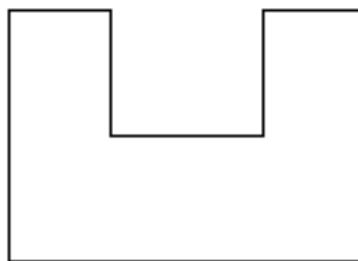
A.



B.



C.

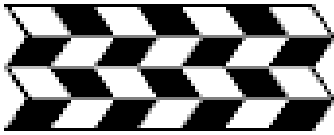


D.



**5. ES 3, Demonstrator 2, Standard 4.G.2** Pearson

What shape has been used to form the tile pattern below?



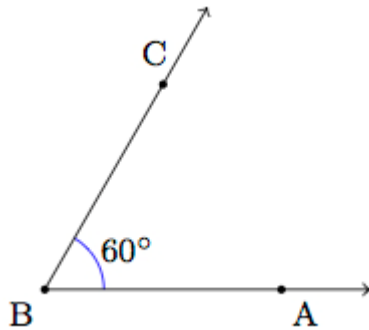
- A. squares
- B. trapezoids
- C. rectangles
- D. parallelograms

**6. ES 3, Demonstrator 1, Standard 4.G.2** Pearson

Which quadrilateral has all sides the same length?

- A. trapezoid
- B. rhombus
- C. rectangle
- D. parallelogram

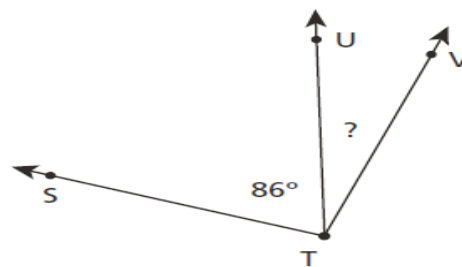
7. ES 3, Demonstrator 3, Standard 4.MD.7 Illustrative Math



- A. Draw an angle that measures 60 degrees like the one shown above.
- B. Draw another angle that measures 25 degrees. It should have the same vertex and share side BA.
- C. How many angles are there in the figure you drew? What are their measures?

8. ES 3, Demonstrator 3, Standard 4.MD.7 Engage NY

The measure of angle STV is  $117^\circ$ . What is the measure of



[not drawn to scale]

- A  $31^\circ$
- B  $63^\circ$
- C  $157^\circ$
- D  $203^\circ$

