

## Fifth Grade Cluster 6 Assessment - Fractions

### This assessment assesses students' ability to:

- Multiply a fraction by a whole number or by a fraction using a visual representation.
- Explain why multiplying a whole number or fraction by a fraction less than one will give you a product less than the original factor.
- Explain why multiplying a whole number or fraction by a fraction greater than one will give you a product that is more than the original factor.
- Solve problems involving multiplication of fractions and mixed numbers.
- Use visual fraction models to represent and solve division problems involving dividing a unit fraction by a whole number or a whole number by a unit fraction.
- Solve problems involving division of whole numbers by a unit fraction or a unit fraction by a whole number.

### NCSCOS 2017 Math Standards:

Standard	Questions
NC.5.NF.4	2, 5, 6, 7, 8, 10, 12
NC.5.NF.7	1, 3, 4, 9, 11

### Fifth Grade Cluster 6 Assessment - Fractions Scoring Guide

Question	Standard	Answer
1	NC.5.NF.7	D
2	NC.5.NF.4	A
3	NC.5.NF.7	C
4	NC.5.NF.7	A
5	NC.5.NF.4	D
6	NC.5.NF.4	A

Question	Standard	Answer
7	NC.5.NF.4	A
8	NC.5.NF.4	C
9	NC.5.NF.7	32
10	NC.5.NF.4	5/6
11	NC.5.NF.7	Rubric
12	NC.5.NF.4	Rubric

### Open Response Rubrics

#### Question 11 (3 points)

Student receives 1 point for each of the following bullets:

- Student writes a math story problem in which one third of a whole is shared equally in two parts.
- Student creates a visual fraction model to represent  $\frac{1}{3} \div 2$ .
- Student completes the equation  $\frac{1}{3} \div 2 = \frac{1}{6}$ .

#### Question 12 (3 points)

Student receives 1 point for each of the following bullets:

- Student record equation with unknown:  $1\frac{1}{2} \times 2\frac{3}{4} = T$ .
- Student creates a visual fraction model to represent  $1\frac{1}{2} \times 2\frac{3}{4}$ .
- Student states that Amy walked  $4\frac{1}{8}$  miles before lunch.

Student Name: \_\_\_\_\_ Date: \_\_\_\_\_

## 5th Grade Cluster 6 Assessment - Fractions

1. Hema is making cupcakes for her classmates. She has a 14-ounce bag of sprinkles.

If she puts  $\frac{1}{3}$  ounce of sprinkles on each cupcake, how many cupcakes can she make using the sprinkles she has?

- A 18  
C 32


- B 24  
**D 42**

*3 cupcakes for each ounce*  
 $14 \times 3$   
 $10 \times 3 + 4 \times 3$   
 $30 + 12 = 42$

2. Emma ran  $4\frac{1}{2}$  miles. For  $\frac{3}{4}$  of her run, she ran uphill. How many miles did she run uphill?

- A  $3\frac{3}{8}$  miles**  
C  $3\frac{3}{4}$  miles

- B  $3\frac{1}{2}$  miles  
D  $4\frac{1}{4}$  miles

$\frac{3}{4}$  of  $4\frac{1}{2}$    
 $\frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{8}$   
 $\frac{12}{4} = 3 + \frac{3}{8}$

3. Ruth had a ribbon that was 9 yards long. She cut the ribbon into pieces that were  $\frac{1}{6}$  yard long. How many pieces of ribbon does she have now?

- A 3 pieces  
**C 54 pieces**

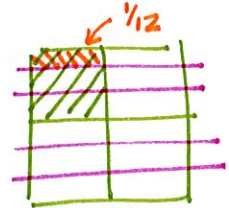
- B 15 pieces  
D 63 pieces

*each yard becomes 6 pieces*  
 $9 \times 6 = 54$

4. Josh has  $\frac{1}{4}$  gallon of orange juice. He wants to share it equally between two friends and himself. How much orange juice will each person drink?

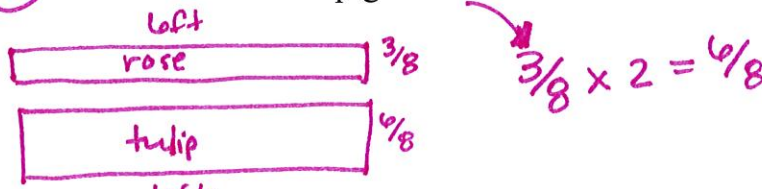
- A  $\frac{1}{12}$  gallon**  
C  $\frac{1}{3}$  gallon

- B  $\frac{1}{8}$  gallon  
D  $\frac{3}{4}$  gallon

$\frac{1}{4} \div 3$  

5. Your neighbor is planting two rectangular gardens. His rose garden is 6 feet long and  $\frac{3}{8}$  foot wide. His tulip garden is 6 feet long and  $\frac{6}{8}$  foot wide. Draw an area model to represent each garden. Which of the following statements is true about the two gardens?

- ~~A~~ The rose and tulip garden have the same area. *no tulip is bigger*  
~~B~~ The rose garden has an area that is  $\frac{3}{8}$  square foot less than the tulip garden. *one side yes but not the area*  
~~C~~ The tulip garden is smaller than the rose garden. *no, tulip is bigger*  
**D** The area of the tulip garden is double the area of the rose garden.



6. Which value for  $S$  would make this mathematical statement true?

$$8 \times S < 8$$

*must be smaller than 1*

A  $\frac{3}{4}$

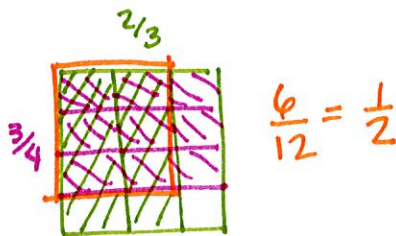
B  $\frac{3}{2}$

C 1

D  $1\frac{1}{3}$

7. Marta drew a rectangular poster.

- The length of the rectangle was  $\frac{2}{3}$  of a yard.
- The width of the rectangle was  $\frac{3}{4}$  of a yard.



What was the area of Marta's rectangle?

A  $\frac{1}{2}$  yard

B  $\frac{5}{12}$  yard

C  $\frac{5}{7}$  yard

D  $1\frac{5}{12}$  yards

8. Ariela measured the length of one side of square poster. The length of one side was  $20\frac{1}{2}$  inches. What is the area of Ariela's square poster?

A  $40\frac{1}{4}$  square inches

B  $400\frac{1}{4}$  square inches

C  $420\frac{1}{4}$  square inches

D  $420\frac{1}{2}$  square inches

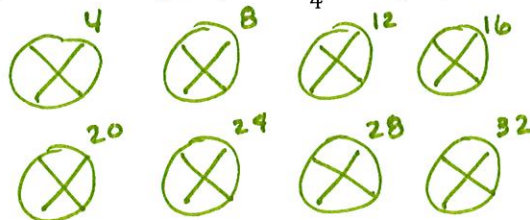
$20\frac{1}{2} \times 20\frac{1}{2}$   
 $20(20 + \frac{1}{2}) + \frac{1}{2}(20 + \frac{1}{2})$   
 $400 + 10 + 10 + \frac{1}{4}$   
 $420\frac{1}{4}$

**Gridded Response Questions:**

9. Christopher made 8 pies for a party. If each guest at the party eats  $\frac{1}{4}$  of a pie, how many guests will the pie serve?

Answer:

32



10. Jennifer has  $2\frac{1}{2}$  yards of ribbon. She wants to use  $\frac{1}{3}$  of the ribbon for a craft. How many yards of ribbon will she use for the craft?

Answer:

$\frac{5}{6}$

$\frac{1}{3}$  of  $2\frac{1}{2}$

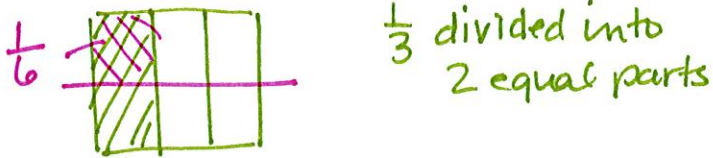
$\frac{1}{3} + \frac{1}{3} + \frac{1}{6}$   
 $\frac{2}{3} + \frac{1}{6}$   
 $\frac{4}{6} + \frac{1}{6} = \frac{5}{6}$

**Open Response Questions:**

11. Write a math story problem to match  $\frac{1}{3} \div 2$ .

Answers vary

Draw a fraction model to represent your math story problem.



Use your model to complete this equation:  $\frac{1}{3} \div 2 = \underline{\frac{1}{6}}$

12. A trail in a local park is  $2\frac{3}{4}$  miles long. Amy walked the whole trail and half of the way back before taking a break for lunch. If T is the total number of miles Amy walked before her lunch break, write an equation to represent the distance Amy has walked.

Equation:  $1\frac{1}{2} \times 2\frac{3}{4}$  or  $2\frac{3}{4} + (\frac{1}{2} \times 2\frac{3}{4})$

Draw a visual fraction model that could be used to find the number of miles Amy walked before her lunch break:

