

# Grade 5 - Multiplication as Scaling - Test

Common Core 5.NF.B.5a, 5.NF.B.5b · [maths-pdf.fr/en/](https://maths-pdf.fr/en/)

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

This test has 9 questions worth 20 points in all. It checks multiplication as scaling (5.NF.B.5a, 5.NF.B.5b): predicting whether a product is greater or less than a factor, and calculating scaled amounts. Show all work. The test takes about 45 minutes.

## About this test

- Grade: Grade 5
- Chapter: Multiplication as Scaling
- Standards: 5.NF.B.5a, 5.NF.B.5b
- Time: 45 minutes
- Total: 20 points

## Question 1 - Predict without calculating [2 pts]

Write  $<$ ,  $>$ , or  $=$  in each blank. Do not calculate.

a.  $7 \times \frac{5}{6}$  \_\_\_\_ 7 (1 point)

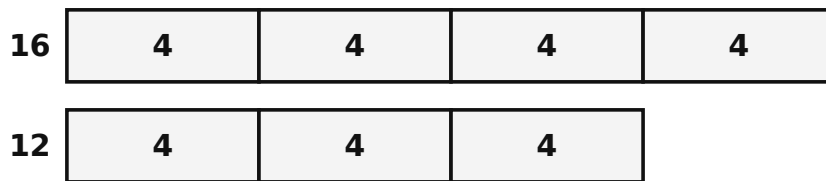
b.  $7 \times \frac{11}{8}$  \_\_\_\_ 7 (1 point)

## Question 2 - Order the products [2 pts]

Write these expressions in order from least to greatest value:  $20 \times \frac{3}{2}$ ,  $20 \times \frac{1}{4}$ ,  $20 \times 1$ ,  $20 \times \frac{5}{4}$ .

## Question 3 - Find the scale factor [2 pts]

The bars show 16 and 12. The number 12 is the product of 16 and a scale factor.



The top bar is 16 and the bottom bar is 12.

- What is the scale factor? (1 point)
- Is the scale factor greater than 1 or less than 1? Explain how you know from the bars. (1 point)

#### Question 4 - Calculate and compare [3 pts]

- Find  $18 \times \frac{5}{6}$ . (1 point)
- Find  $3\frac{1}{2} \times 1\frac{3}{7}$ . (1 point)
- For each product, tell whether it is greater than or less than the first factor. (1 point)

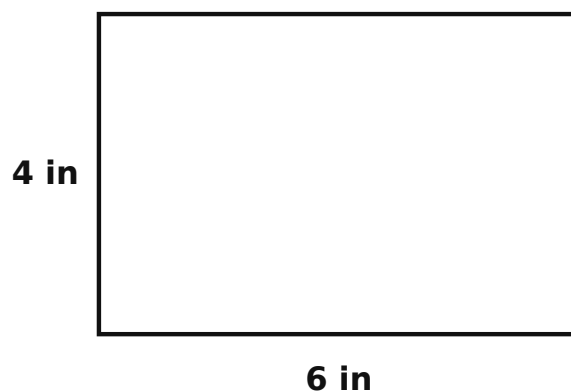
#### Question 5 - Find the mistake [2 pts]

Liam says, "Multiplying always makes a number bigger, so  $9 \times \frac{2}{3}$  is greater than 9."

- Explain Liam's mistake. (1 point)
- Find the product  $9 \times \frac{2}{3}$ . (1 point)

#### Question 6 - Photo sizes [3 pts]

A photo is 6 inches wide and 4 inches tall.



Original photo.

- Mei enlarges the photo to  $\frac{3}{2}$  times its size. Find the new width and the new height. (2 points)
- Noah shrinks the original photo to  $\frac{2}{3}$  times its size. Find the new width. (1 point)

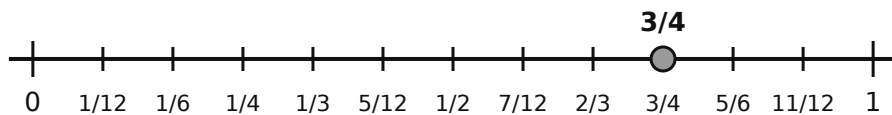
### Question 7 - Smoothie recipe [2 pts]

A smoothie recipe uses  $2\frac{1}{4}$  cups of yogurt.

- Noah makes  $\frac{2}{3}$  of the recipe. How much yogurt does he use? (1 point)
- Mei makes  $\frac{4}{3}$  times the recipe. How much yogurt does she use? (1 point)

### Question 8 - Fraction on a number line [2 pts]

The number line shows  $\frac{3}{4}$ . Without calculating, will  $\frac{3}{4} \times \frac{2}{3}$  be to the left or to the right of  $\frac{3}{4}$ ?



Point at  $\frac{3}{4}$ .

- Choose left or right and explain why. (1 point)
- Find  $\frac{3}{4} \times \frac{2}{3}$ . (1 point)

### Question 9 - Slide lengths [2 pts]

A playground has a slide that is 20 feet long. A small slide is  $\frac{3}{5}$  as long as the big slide. A giant slide is  $\frac{9}{4}$  times as long as the big slide.

- How long is the small slide? (1 point)
- How long is the giant slide? (1 point)