

Grade 5 - Multiplication as Scaling - Test Answer Key

Common Core 5.NF.B.5a, 5.NF.B.5b · maths-pdf.fr/en/

This answer key gives worked solutions and a scoring guide for each of the 9 test questions, worth 20 points in all. Use the scoring notes to award points for correct reasoning about the scale factor, even when the calculation has a slip.

Grade 5 · Common Core State Standards: **5.NF.B.5a, 5.NF.B.5b**

Question 1 - Predict without calculating [2 pts]

(a) $\frac{5}{8} < 1$, so $7 \times \frac{5}{8} < 7$.

(b) $\frac{11}{8} > 1$, so $7 \times \frac{11}{8} > 7$.

Scoring: 1 point for each correct symbol.

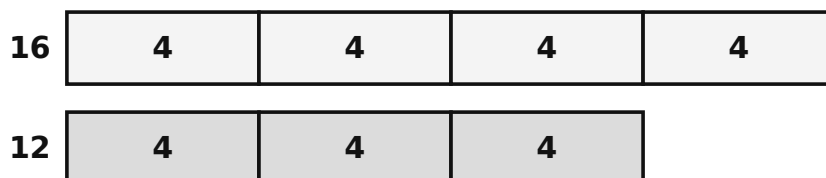
Question 2 - Order the products [2 pts]

$20 \times \frac{1}{4} = 5$, $20 \times 1 = 20$, $20 \times \frac{5}{4} = 25$, $20 \times \frac{3}{2} = 30$.

Least to greatest: $20 \times \frac{1}{4}$, 20×1 , $20 \times \frac{5}{4}$, $20 \times \frac{3}{2}$.

Scoring: 2 points for the correct order. Give 1 point if only one expression is out of place.

Question 3 - Find the scale factor [2 pts]



12 is 3 of the 4 equal parts of 16

Twelve is 3 of the 4 equal parts of 16.

(a) Each part is 4. The bottom bar is 3 parts out of 4: $\frac{3}{4}$. Check: $16 \times \frac{3}{4} = 12$.

(b) **Less than 1**, because the bottom bar is shorter than the top bar (12 is less than 16).

Scoring: 1 point for 3/4; 1 point for a correct explanation.

Question 4 - Calculate and compare [3 pts]

(a) $\frac{5}{6} \times 18 = \frac{90}{6} = 15$: **15**.

(b) $\frac{7}{2} \times \frac{10}{7} = \frac{70}{14} = 5$: **5**.

(c) $15 < 18$ because $\frac{5}{6} < 1$. $5 > 3\frac{1}{2}$ because $1\frac{3}{7} > 1$.

Scoring: 1 point for each part (part c needs both comparisons).

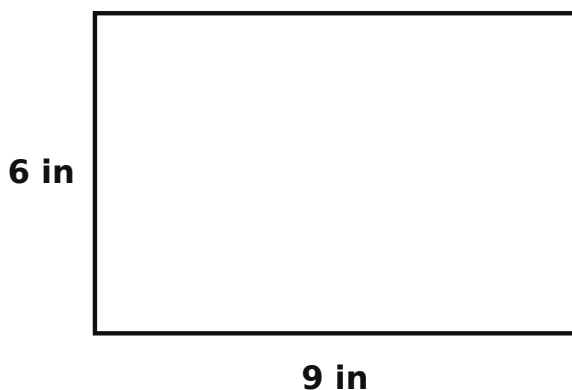
Question 5 - Find the mistake [2 pts]

(a) The scale factor $\frac{2}{3}$ is less than 1, so the product is less than 9. Multiplying by a number less than 1 makes a number smaller.

(b) $9 \times \frac{2}{3} = \frac{18}{3} = 6$: **6**.

Scoring: 1 point for a correct explanation; 1 point for 6.

Question 6 - Photo sizes [3 pts]



Enlarged photo: 9 in by 6 in.

(a) Width: $6 \times \frac{3}{2} = 9$ inches. Height: $4 \times \frac{3}{2} = 6$ inches: **9 inches by 6 inches**.

(b) $6 \times \frac{2}{3} = 4$: **4 inches**.

Scoring: (a) 1 point for each dimension. (b) 1 point.

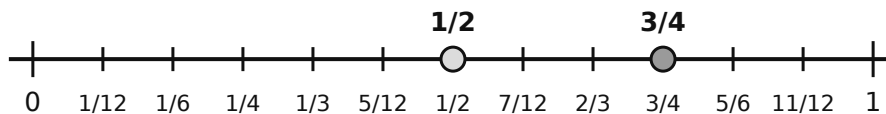
Question 7 - Smoothie recipe [2 pts]

(a) $\frac{9}{4} \times \frac{2}{3} = \frac{18}{12} = 1\frac{1}{2}$: **1½ cups.**

(b) $\frac{9}{4} \times \frac{4}{3} = \frac{36}{12} = 3$: **3 cups.**

Scoring: 1 point for each correct amount with units.

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



The product $1/2$ is to the left of $3/4$.

(a) **Left.** The factor $\frac{2}{3}$ is less than 1, so the product is less than $\frac{3}{4}$.

(b) $\frac{3}{4} \times \frac{2}{3} = \frac{6}{12} = \frac{1}{2}$: **½.**

Scoring: 1 point for left with a correct reason; 1 point for $1/2$.

Question 9 - Slide lengths [2 pts]

(a) $\frac{3}{5} \times 20 = 12$: **12 feet.**

(b) $\frac{9}{4} \times 20 = 45$: **45 feet.**

Scoring: 1 point for each correct length with units.

Total

20 points