



Multiplication as scaling

GRADE 5 MATH

Name _____

Date _____

Answer by comparing the multiplier with 1. Only calculate where an item says to.

WORKED EXAMPLE

Multiplier more than 1 → bigger. Exactly 1 → unchanged. Less than 1 → smaller. Always say bigger than WHICH number. Dividing by less than 1 makes things bigger.

1. Without calculating, say whether each is more or less than 12: $12 \times \frac{2}{3}$, $12 \times \frac{5}{5}$, $12 \times \frac{7}{6}$, $12 \times \frac{1}{10}$.

FLUENCY

Show your thinking

Answer

2. Without calculating, put these in order, smallest first: $20 \times \frac{1}{2}$, 20×1 , $20 \times \frac{3}{4}$, 20×2 .

APPLICATION

Show your thinking

Answer

3. A 12 cm photo is scaled by $\frac{3}{4}$, then the result is scaled by $\frac{4}{3}$. What size is it now? Explain without doing both multiplications.

REASONING

Show your thinking

Answer

4. Is 1.5×0.6 bigger or smaller than 1.5? Bigger or smaller than 0.6? Answer both without calculating.

REASONING

Show your thinking

Answer

5. Work out $6 \times \frac{1}{2}$

APPLICATION

Show your thinking

Answer

6. Work out $6 \div \frac{1}{2}$

APPLICATION

Show your thinking

Answer

7. You have just worked out $6 \times \frac{1}{2}$ and $6 \div \frac{1}{2}$. Explain why one is smaller than 6 and the other bigger.

REASONING

Show your thinking

Answer

8. Fill in a fraction that makes this true, and explain your choice: $15 \times \underline{\hspace{1cm}}$ is between 15 and 20.

APPLICATION

Show your thinking

Answer

9. Why is 1 the dividing line, rather than 0?

REASONING

Show your thinking

Answer

10. A child says $0.3 \times 0.4 = 1.2$, because 0.12 is “too small to be a multiplication answer”. Answer them using scaling.

REASONING

Show your thinking

Answer

11. Why does the standard tell you to compare WITHOUT multiplying? What would be lost if you always calculated first?

REASONING

Show your thinking

Answer