

End of Module 3 Assessment Study Guide (Lessons 1 – 21)

There will be **10 questions** on this assessment. Be able to solve each of the problem-types below. This assessment covers all of Module 3 material. Using prior study guides is also a recommended way to prepare for this assessment.

Item 1: Evaluate expressions

1. Evaluate.

$$\frac{1}{3} \times \frac{1}{5} = \underline{\frac{1}{15}}$$

When multiplying two fractions, numerator times numerator, denominator times denominator.

$$\frac{1}{9} \times 5 = \underline{\frac{5}{9}}$$

When multiplying a fraction by a whole number, numerator times the whole number; keep the denominator.

$$\frac{4}{7} \times \frac{3}{5} = \underline{\frac{12}{35}}$$

$$\frac{3}{2} \times 5 = \underline{\frac{15}{2}} \text{ or } 7 \frac{1}{2}$$

Item 2: Evaluate an expression with parentheses

$$\frac{3}{5} \times \left(\frac{1}{3} + \frac{1}{8} \right) = \underline{\frac{33}{120}}$$



$$\left(\frac{8}{24} + \frac{3}{24} \right)$$

$$\frac{3}{5} \times \frac{11}{24} = \frac{33}{120}$$

When evaluating expressions with parentheses, always follow PEMDAS rules and solve inside the parentheses first. In this case, we need to add $\frac{1}{3}$ and $\frac{1}{8}$. Are the denominators the same? No! Therefore, we must make them the same.

Item 3: Match a word problem to an expression

3. Sana cuts a rope that is 23 feet long into two pieces of different lengths. The shorter piece is $\frac{1}{3}$ of the total length.

Which expression represents the length of the shorter piece?

- A. $23 - \frac{1}{3}$
- B. $23 \div \frac{1}{3}$
- C. $\frac{1}{3} \times 23$
- D. $\frac{1}{3} \div 23$

Remember the word "of" means to multiply. When we read that the shorter piece of rope is $\frac{1}{3}$ of the total, that means $\frac{1}{3} \times 23$ feet.

Although you don't have to solve it, that works out to be $\frac{23}{3}$ or $7 \frac{2}{3}$ feet long.

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Item 4: Match the model to the expression.

4. Consider the expressions $\frac{1}{2} \div 6$ and $6 \div \frac{1}{2}$.

Part A

Match each expression to a model.

Model	$\frac{1}{2} \div 6$	$6 \div \frac{1}{2}$
		x
	x	

Notice in the top model, it shows a tape diagram that is 6 long. Each of the six partitions is split in half. So, this model shows 6 divided by $\frac{1}{2}$ which becomes $6 \times 2 =$ to make 12 pieces.

The bottom model is a tape diagram that shows a half. The half is partitioned into 6 equal parts. So, this model shows $\frac{1}{2}$ divided by 6.

Part B

Complete each division equation. Then use the numbers from the division equation to write a related multiplication equation.

Write one number from the given answer choices in each blank to complete each equation. Numbers may be used more than once.

$$6 \div \frac{1}{2} = \underline{\quad 12 \quad}$$

$$\underline{\quad 12 \quad} \times \underline{\quad \frac{1}{2} \quad} = \underline{\quad 6 \quad}$$

$$\frac{1}{2} \div 6 = \underline{\quad \frac{1}{12} \quad}$$

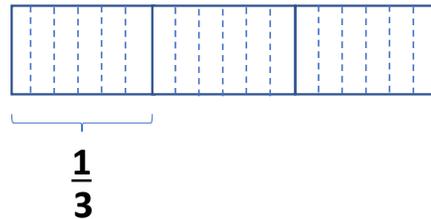
$$\underline{\quad 6 \quad} \times \underline{\quad \frac{1}{12} \quad} = \underline{\quad \frac{1}{2} \quad}$$

Be able to solve each expression AND be able to write each division expression as a multiplication expression.

Item 5: Word Problem

5. Eddie makes 6 bags of snack mix. He has $\frac{1}{3}$ pound of raisins. Each bag of snack mix gets an equal amount of raisins. How many pounds of raisins are in each bag?

- A. 18 pounds
- B. 2 pounds
- C. $\frac{1}{2}$ pound
- D. $\frac{1}{18}$ pound**



Ask yourself, what is being split up here? The bags or the raisins. The raisins!
So, we divided the $\frac{1}{3}$ by 6.
We could also draw a tape diagram as shown to the left.

$$\frac{1}{3} \div 6$$

$$\frac{1}{3} \times \frac{1}{6} = \frac{1}{18}$$

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Item 6: Match the expression with its description.

6. Match each expression with its description.

Description	Expression
$\frac{3}{8}$ of the sum of $\frac{4}{5}$ and $\frac{2}{3}$	$\frac{2}{3} + \left(\frac{4}{5} - \frac{2}{8}\right)$
The sum of $\frac{2}{3}$ and the difference of $\frac{4}{5}$ and $\frac{3}{8}$	$\frac{4}{5} - \left(\frac{3}{8} \times \frac{2}{3}\right)$
The difference of $\frac{4}{5}$ and the product of $\frac{3}{8}$ and $\frac{2}{3}$	$\frac{3}{8} \times \left(\frac{4}{5} + \frac{2}{3}\right)$

Look for key words.

In the first one, “sum of” $\frac{4}{5}$ and $\frac{2}{3}$ means that those two fractions must be added **BEFORE** finding $\frac{3}{8}$ of it. Therefore, they must be in parentheses. *Of* means to multiply.

In the second, “difference” of $\frac{4}{5}$ and $\frac{3}{8}$ means those fractions must be subtracted, therefore should be done first in the parentheses.

In the third, “product” means to multiply. We are looking for $\frac{3}{8} \times \frac{2}{3}$. “Difference” means to subtract.

Item 7: Word Problem

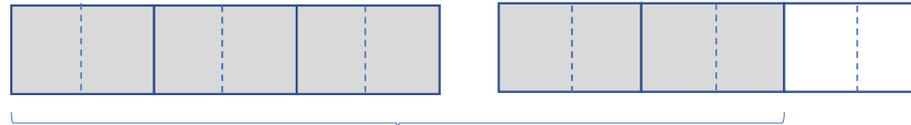
7. Sasha has $\frac{5}{3}$ pounds of flour. She uses $\frac{1}{2}$ of the flour to make bread. How many pounds of flour does Sasha use to make bread?

Look for key words.

$\frac{1}{2}$ of the flour, or $\frac{1}{2} \times \frac{5}{3}$.

$\frac{1}{2} \times \frac{5}{3} = \frac{5}{6}$ pounds of flour.

A tape diagram may also help you see it. What is shaded? $\frac{10}{12}$ or $\frac{5}{6}$



$$\frac{5}{3} = 1\frac{2}{3}$$

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Item 8: Multi-step Word Problem

Blake lives $\frac{3}{4}$ miles from school. He walks $\frac{2}{9}$ of the distance to school before he stops to tie his shoe. How many more **feet** does Blake walk to reach school?

Look for key words and bold words carefully.

Notice that the question gives information in miles but wants the final answer in **feet**. We need to know that there are **5,280 feet in a mile** to solve this problem.

Blake lives $\frac{3}{4}$ OF A MILE or $\frac{3}{4}$ OF 5,280 feet away from school.

$\frac{3}{4} \times 5280 \text{ feet} = 15,840/4 = \mathbf{3,960 \text{ feet away from school}}$.

If he stops walking at $\frac{2}{9}$ of that distance, that means he still must walk **$\frac{7}{9}$ of that distance**.

So, **$\frac{7}{9}$ OF 3,960 feet**. That becomes, $27,720/9 = \mathbf{3,080 \text{ feet left to walk}}$.

Item 9: Know the Rules!

KNOW THE RULES!

$$\frac{\square}{4} \times 18 < 18$$

We need to place a number in the box to make the expression true. The fraction on the LEFT needs to be LESS THAN 18. So, **we must remember the rules**. If we multiply a number by a fraction LESS THAN ONE, the product will be LESS THAN the original number. **So, the numbers 1, 2, or 3 work in this box.**

If we wrote a 4 in the top box, both sides would be 18 and the sign should be =. If we wrote a 5 or more in the top box, the left side would be greater than one and the left side would be greater (>) than 18.

Item 10: Write your OWN word problem to match an expression.

$$9 \div \frac{1}{5}$$

Stop and think about the problem you are given. Write a word problem (and solve it) to match the expression.

Here you have 9 things, let's say oranges. You split them, cut them, or divided them into 5 equal pieces. You are splitting the oranges into fifths. How many fifths will you have?

$9 \div \frac{1}{5}$ becomes $9 \times 5 = 45$

You will have 45 orange slices.