

Grade 4, Unit 11, Lesson 6: Using area models to multiply non-unit fractions by whole numbers.

Speed

This is generally a two person game, though it can be played with 3 players.

Goal:

Players alternate turning over cards to answer as many multiplication problems as they can in 20 seconds. When the cards have been used up, players score their hand. The winner is the player with the most points.

Materials needed:

- Set of game cards
- Access to a way to keep track of time (eg. stop watch or easily visible wall clock with a second hand)

Set up:

Players place the fraction cards in one pile face down. They place the whole number cards in a second pile face down.

Directions:

- Players each turn over a fraction card. The player with the smaller fraction gets to choose whether to be the racer or the timer first.
- The timer either starts the stop watch or watches the clock so s/he can time 20 seconds. S/he should say “start” at the beginning of the 20 seconds and “stop” at the end of the 20 seconds. S/he also listens to what the racer says. If s/he thinks that the racer has said a wrong answer, s/he says, “Check”, which means the racer should put that pair of cards into a different pile, to be checked when the 20 seconds are up.
- Once the timer says, “start,” the racer turns over a fraction card and a whole number card, multiplies them together, and says the product. Then the racer puts those two cards in a pile in front of her/him and turns over two new cards. The racer’s goal is to turn over and multiply as many cards as possible during these 20 seconds. The racer gets to keep all the pairs that s/he successfully multiplied. If the timer says, “check,” the racer should put that pair in a different pile.
- At the end of the 20 seconds (after the timer has said, “stop”), the racer goes through the pile of cards to be checked. The timer gives her/him 5 seconds to re-multiply each pair in this pile. If the racer says the product correctly this time s/he says gets to keep the cards. If the racer is not able to say the product correctly within the 5 seconds the cards get reshuffled into the decks. If players disagree on whether a pair was multiplied correctly, the timer writes out the problem and explains to the racer why s/he believes the product is different from what the racer said.
- Players switch roles. They continue alternating between being the timer and the racer until the cards are used up.
- Once the cards are used up, players look through the pairs of cards they have collected and complete the scoring worksheet to determine their total score.

Name _____

Date _____

Annotated Answer Key

Name _____

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What is the smallest product in your hand? What numbers did you multiply to get this product? ***(Compare this product to your opponent's smallest product. The player with the smaller product receives 2 points.)***

What is the largest product in your hand? What numbers did you multiply to get this product? ***(Compare this product to your opponent's largest product. The player with the larger product receives 2 points.)***

Do you have any products that are equivalent to 2 wholes? What numbers did you multiply to get these products? ***(Give yourself 1 point for each pair of numbers you multiplied to get a product of 2.)***

Do you have any products that are equivalent to 3 wholes? What numbers did you multiply to get these products? ***(Give yourself 1 point for each pair of numbers you multiplied to get a product of 3.)***

How many pairs do you have? ***(Compare this number to your opponent's number. The player with the most pairs receives 3 points.)***

Write your total score: _____

Annotated Answer Key

Name _____

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2	3	4
5	6	7
8	9	10

Annotated Answer Key

Name _____

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$\frac{2}{3}$	$\frac{2}{4}$	$\frac{3}{4}$
$\frac{2}{5}$	$\frac{3}{5}$	$\frac{4}{5}$
$\frac{2}{6}$	$\frac{3}{6}$	$\frac{4}{6}$

Annotated Answer Key

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$\frac{5}{6}$	$\frac{2}{8}$	$\frac{3}{8}$
$\frac{4}{8}$	$\frac{5}{8}$	$\frac{6}{8}$
$\frac{7}{8}$	$\frac{2}{10}$	$\frac{3}{10}$

Annotated Answer Key

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$\frac{4}{10}$	$\frac{5}{10}$	$\frac{6}{10}$
$\frac{7}{10}$	$\frac{8}{10}$	$\frac{9}{10}$
$\frac{2}{12}$	$\frac{3}{12}$	$\frac{4}{12}$

Annotated Answer Key

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$\frac{5}{12}$	$\frac{6}{12}$	$\frac{7}{12}$
$\frac{8}{12}$	$\frac{9}{12}$	$\frac{10}{12}$
$\frac{11}{12}$	$\frac{2}{100}$	$\frac{3}{100}$

Annotated Answer Key

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$\frac{4}{100}$	$\frac{5}{100}$	$\frac{6}{100}$
$\frac{7}{100}$	$\frac{8}{100}$	$\frac{9}{100}$
$\frac{10}{100}$	$\frac{2}{2}$	$\frac{3}{3}$

Annotated Answer Key

Name _____

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****Note that this game will work best if students are paired with peers who have similar comfort levels with multiplication facts and multiplying fractions.**

****Note also that, while there is only one page of whole number cards included, this page will need to be copied so there are a total of 5 pages of whole number cards. This will mean that there are the same number of whole number cards and fraction cards.**

Look for students able to multiply the fraction by the whole number accurately and mentally. Are students able to multiply the fractions quickly in their head or do they take a long time to solve each problem? Students who solve only one or two problems during the 20 seconds probably need more help understanding how to multiply non-unit fractions mentally. Because the emphasis is on the procedure for multiplying a fraction by a whole number, converting fractions greater than one into mixed numbers is not required in this game.

Check the worksheet to make sure that students are multiplying accurately.