



Stuck? Scan
for the anchor
chart

WHAT DIVISION MEANS · SET 3 · GRADE 3

Times as Much: Division Un-Stretches

Multiplying by 3 **stretches** a number to 3 times its size.

Division is the un-stretch: it finds the original.

Leo's marbles: 4



stretch $\times 3 \downarrow$ · *un-stretch* $\div 3 \uparrow$

Mia's marbles: 3 times as many = 12



$$4 \times 3 = 12$$

stretch

$$12 \div 3 = 4$$

un-stretch: find Leo

$$12 \div 4 = 3$$

how many times as much?

The tool for this whole set is the **tape diagram**: one bar for each person, cut into equal pieces. Draw the bars and the answer shows itself.

Roots of Reason

Times as Much · Set 3

Name _____ Date _____

Stretch It, Then Un-Stretch It

Every stretch has an un-stretch that brings it back.

1. This bar is 5 long. Draw a bar that is **2 times as long** right below it. Cut your bar into two 5s.

5

Your bar shows $5 \times 2 =$

2. Now un-stretch. This bar shows 18, and it is **3 times as long** as the mystery bar. Cut it into 3 equal pieces with two lines, write the number in each piece, then draw the mystery bar below.

18 in all

mystery bar

The mystery bar is long. $18 \div 3 =$

Say it out loud: "18 is 3 times as much as **what?**" That question mark is what division hunts for.

Roots of Reason

Times as Much · Set 3

Name _____ Date _____

The Money Question

**"Ava has 3 times as much money as Ben. Ava has 24 dollars.
How much does Ben have?"**

- 1.** Read the bars. Ava's bar is 3 of Ben's bars glued together. Write the amount in each piece of Ava's bar, then write Ben's amount.

Ava · 24 dollars in all

--	--	--

Ben · ?

--

Ben has

--

dollars. $24 \div 3 =$

--

- 2.** Flip the question. **"Ava has 24 dollars. Ben has 8. Ava has how many TIMES as much as Ben?"** Draw Ben's bar over and over under Ava's until you match her 24. Count your copies.

Ava · 24

24

draw copies of Ben's 8-bar here

 $24 \div 8 =$

--

times as much

Roots of Reason

Times as Much · Set 3

Name _____ Date _____

Bigger Than vs. Times As Big

"6 more" and "6 times as much" are different animals.
One is adding. One is stretching.

1. A cat weighs 4 pounds. Fill in both, and notice how different the answers are.

The dog weighs **4 pounds MORE** than the cat.

Dog: pounds

The dog weighs **4 TIMES as much** as the cat.

Dog: pounds

2. Now with bars. A goat weighs **20 pounds**. A pony weighs **100 pounds**. Draw goat-bars under the pony-bar until they match its 100. Then answer BOTH questions below.

Pony · 100 pounds

100

goat bars, 20 each

$100 \div 20 =$

times as heavy

$100 - 20 =$

pounds heavier

Both true. Different questions.

Roots of Reason

Times as Much · Set 3

Name _____ Date _____

Your Comparison Story

Find two things where one is truly some TIMES the other.
Your shoe and a ruler. Your age and a grown-up's.

1. Show your two things: a photo, or a drawing of both side by side.



Photo of your two things

or draw them here

2. Now measure or count, and tell the story in numbers:

The big one measures . The small one measures .

The big one is about times as big, because ÷ =

"About" is allowed. Real things are rarely exact. Mathematicians round all the time.



WHAT DIVISION MEANS · SET 3 · GRADE 3

Answer Key and Teacher Notes

Stretch It, Then Un-Stretch It (page 2)

1. $5 \times 2 = 10$ (a bar of two 5s) 2. Each piece is 6; mystery bar is 6; $18 \div 3 = 6$

The Money Question (page 3)

1. Each piece of Ava's bar is 8; Ben has 8 dollars 2. $24 \div 8 = 3$ times as much (three 8-bars fit under 24)

Bigger Than vs. Times As Big (page 4)

1. 4 more = 8 pounds; 4 times = 16 pounds 2. $100 \div 20 = 5$ times as heavy; $100 - 20 = 80$ pounds heavier

Your Comparison Story (page 5)

Answers vary. Check that the division sentence matches the two measurements and that the child chose a TIMES comparison, not a MORE comparison. Estimation and rounding are fine; the reasoning is the target.

The trap in this set is page 4, on purpose. "Times as much" gets read as "more than" by almost every student at first, and the mistake survives quietly into algebra if nobody surfaces it. If both dog answers come back as 8, celebrate: the misconception just showed itself where you can see it, one page before it would have cost anything.