



Roots of Reason

Name _____ Date _____

Ones and Zeros

Four rules that look alike. Each one answers a **different question**.

1. Answer each one. Before you write, say the question in your head: groups of what?

$$7 \div 1 = \underline{\hspace{2cm}}$$

$$7 \times 1 = \underline{\hspace{2cm}}$$

$$7 \times 0 = \underline{\hspace{2cm}}$$

$$9 \div 1 = \underline{\hspace{2cm}}$$

$$0 \div 9 = \underline{\hspace{2cm}}$$

$$9 \div 9 = \underline{\hspace{2cm}}$$

$$12 \div 1 = \underline{\hspace{2cm}}$$

$$12 \times 0 = \underline{\hspace{2cm}}$$

$$12 \div 12 = \underline{\hspace{2cm}}$$

2. Sort these five into the column that tells what happens: $6 \div 1$, 6×0 , $0 \div 6$, $6 \div 6$, 6×1

stays 6

becomes 0

becomes 1

Name _____ Date _____

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Neighbor Facts

Many wrong answers are **the right answer to a nearby fact**.

1. Solve each pair. They are neighbors, so slow down at the fence.

$12 \times 6 = \underline{\hspace{2cm}}$

$12 \times 7 = \underline{\hspace{2cm}}$

$36 \div 6 = \underline{\hspace{2cm}}$

$36 \div 12 = \underline{\hspace{2cm}}$

$8 \times 8 = \underline{\hspace{2cm}}$

$8 \div 8 = \underline{\hspace{2cm}}$

$8 \times 12 = \underline{\hspace{2cm}}$

$96 \div 12 = \underline{\hspace{2cm}}$

2. Two of these are wrong. Circle them on paper or say them out loud, then type the corrected facts below.

$8 \times 12 = 96$

$12 \times 7 = 72$

$36 \div 12 = 3$

$5 \times 9 = 30$

$48 \div 12 = 4$

fix 1: _____

fix 2: _____

3. A student wrote $12 \times 7 = 72$. 72 is the right answer to a **different** problem. Write that problem, then explain a way to catch this mix-up before it happens.

Before you write an answer, check it against the facts just before and after it.

Name _____ Date _____

Too big to do in your head. Split it and write the **pieces on paper**.

- $$83 \times 2 = (80 \times 2) + (3 \times 2) = \quad + \quad =$$

- $$64 \times 9 = (\quad \times 9) + (\quad \times 9) = \quad + \quad = \quad$$

$47 \times 6 =$

$38 \times 4 =$ _____

rootsofreason.org · Page 4 of 5

Name _____ Date _____

Take out easy chunks of the divisor until nothing is left. **Keep count** as you go.

- Chunk 1: 20 fours = 80. Left over: $96 - 80 =$ _____

Chunk 2: fours = . Left over: 0

Total fours: $20 + \quad = \quad$ so $96 \div 4 = \quad$

- Chunk 1: 10 twelves = . Left over: $156 -$ =

Chunk 2: twelves = . Left over: 0

 $156 \div 12 = \underline{\hspace{2cm}}$ $84 \div 6 =$

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