

What to bring to class:  
Ask students to bring PM  
4A and 5A.

## 1.6 - Division

Def: Division is related to multiplication by "missing factor"  
(say: similar to missing addend with subtraction)

Ex:

$$\begin{array}{ccc} 24 \div 4 = \_ & \xleftrightarrow{\text{means}} & 4 \times \_ = 24 \\ \begin{array}{c} \nearrow \\ \uparrow \\ \nwarrow \end{array} & & \begin{array}{c} \nwarrow \\ \uparrow \\ \nearrow \end{array} \\ \text{dividend} \ \text{divisor} \ \text{quotient} & & \text{factors} \ \text{product} \end{array}$$

Note: \* Write  $12 \div 4$  not  $12/4$  until fractions are mastered.

\*No new facts needed- relate to multiplication

4-fact families:

$$5 \times 7 = 35$$

$$7 \times 5 = 35$$

$$35 \div 7 = 5$$

$$35 \div 5 = 7$$

\*reduces need for memorization

Division is about making groups. Illustrate using

Set Model

Measurement Model

} ask

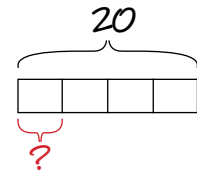
← preferred, since set model is inefficient for large numbers

2 interpretations: Ex:  $20 \div 4$  means

Interpretation	Int. question	Diagram
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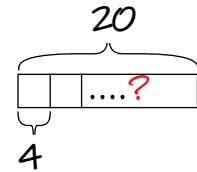
Partitive

"20 is 4 groups of what?"



Measurement

"20 is how many 4s?"



*say: don't confuse with meas. model*

*Say: these are important & very different.*

*Partitive = how big is each part?*

*Measurement = think of measuring w/ ruler length 4.*

*How many parts?*

\*teacher knowledge - know how to vary word problems when teaching.

Examples: Primary 3A (have students open book)

-pg 45 #2

-pg 47 #9

-pg 48 #9

-pg 65 #6-10

Ask:

1) Partitive or Measurement?

2) Interpretive question?

3) Which diagram type?

easier {

Mental Math:

Divide by 4: (divide by 2 twice)

$$84 \div 4$$

$$84 \xrightarrow{\div 2} 42 \xrightarrow{\div 2} 21$$

$$128 \div 4$$

$$\underline{128} \xrightarrow{\div 2} 64 \xrightarrow{\div 2} 32$$

$$1264 \div 4$$

$$\underline{1264} \xrightarrow{\div 2} \underline{632} \xrightarrow{\div 2} 316$$

$$4164 \div 4$$

$$\underline{4164} \xrightarrow{\div 2} 2082 \xrightarrow{\div 2} 1041$$

\*explain how underlined digits are used.

Divide by 5: (divide by 10 and double) or (double, then  $\div 10$ ):

$$330 \div 5$$

$$1280 \div 5$$

$$135 \div 5$$

$$75 \div 5$$

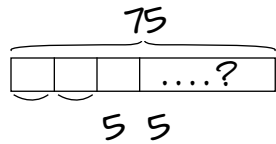
$$415 \div 5$$

Compensation:

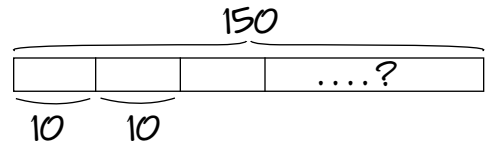
$$75 \div 5 = 150 \div 10$$



doubling both gives same answer



double  
size



75 is how many 5's?

150 is how many 10's?

$$140 \div 5 = 280 \div 10 = 28$$

$$135 \div 15 = 270 \div 30 = 27 - 3 = 9$$

compensation again!

$$1400 \div 35 = 2800 \div 70 = 40$$

$$150 \div 6 = 50 \div 2 = 25$$

$$(\div 3) (\div 3)$$

Division by 0 is undefined

Case 1:  $8 \div 0$

8 is how many 0's?

No answer

Case 2:  $0 \div 0$

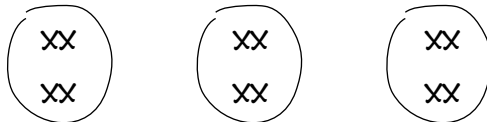
0 is how many 0's?

Too many answers!

\*so  $\_ \div 0$  is undefined because either way it doesn't specify a number!

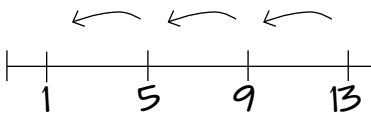
Remainders: Amount left over

set:  $13 \div 4$



x  
remainder

Measurement:



remainder

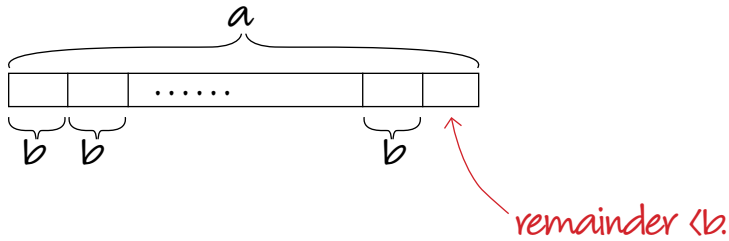
## Quotient Remainder Theorem:

For any whole numbers  $a \notin b$  ( $b \neq 0$ ) there are unique whole numbers  $q$  (quotient) and  $r$  (remainder) so that

$$a = bq + r \quad 0 \leq r < b$$

Explanation:  $a = (q \text{ groups of } b) + \text{remainder}$

\*measure bar of length  $a$  with ruler of length  $b$ :



HW Read 1.6 & 1.7

Do HW 6

Bring 3A & 5A

\*if time - bar diagrams for 3cd HW6, 4ab, 6

\*HW 5 - go over 4, 6, 7