

Category 1 – Numbers, Operations, and Reasoning

PLACE VALUE

hundred thousands	ten thousands	thousands,	hundreds	tens	ones
4	6	7,	5	8	9

larger place value ← → smaller place value

A comma separates the thousands from the hundreds. When reading numbers aloud, say *thousand* when you reach the comma.

Example: $467,589 = 400,000 + 60,000 + 7,000 + 500 + 80 + 9$
 From left to right, 467,589 is read as *four hundred sixty-seven thousand, five hundred eighty-nine*.

COMPARING AND ORDERING NUMBERS

Symbol	Meaning	Example
=	is equal to	$152 = 152$
>	is greater than	$152 > 125$
<	is less than	$125 < 152$

- Write each number you want to compare on its own line.
- Line up the same place values in the same column.
- Starting from the left, compare the value of each digit.
- If the numbers in a certain column are the same, move to the next column (to the right) and compare the digits there. Do this until the numbers are not the same.
- Compare the different numbers.

Example: Compare 4,786 to 4,863.
 From left to right, the first column is the same (4). The second column is different. Since 7 is less than 8, 4,786 is less than 4,863.

You can order numbers from least to greatest (ascending) or from greatest to least (descending).

ROUNDING AND ESTIMATING

- Find the place to which you are rounding (tens, hundreds).
- Look at the number to the right of it.
- If that number is 5 or greater, round up. If the number is less than 5, round down. If the number is 5, round up or down depending on the number to the left.

Examples: Round 645 to the nearest hundred.
 645 rounds to 700 because 4 is greater than 5.
 645 rounds to 600 because 4 is less than 5.

When you do not need an exact amount, you can estimate. Round numbers to the nearest place (tens, hundreds, thousands).

Example: Estimate the sum of 11 stamps and 23 stamps.
 Round 11 to 10 and 23 to 20. $10 + 20 = 30$. The sum is about 30.

FRACTIONS

A fraction is a part of a whole = $\frac{\text{numerator}}{\text{denominator}}$

Example: What fraction of the rectangle is shaded?
 Answer: $\frac{2}{10}$

Example: What fraction of the figures are circles?
 $\frac{2 \text{ circles}}{3 \text{ total figures}} = \frac{2}{3}$ Read as two-thirds.

Example: $\frac{1}{10}$ or one-tenth is shaded red.

MODELING ADDITION AND SUBTRACTION

sum: result of adding numbers (total)
Model (Pictures):
Number Sentence: $3 + 2 = 5$
Words (Read as...): two plus two equals four

difference: result of subtracting numbers
Model (Pictures):
Number Sentence: $5 - 3 = 2$
Words (Read as...): five minus three equals two

Example: Use a number line to model the equation $5 - 3 = 2$.

MULTIPLICATION AND DIVISION PROBLEMS

product: result of multiplying numbers
Example: How many total birds are there?

Red	Blue
146	45
<hr/>	
146	45
<hr/>	
191	

MULTIPLICATION AND DIVISION PROBLEMS

product: result of multiplying numbers
Example: If each box has 25 toys, how many total toys are in 6 boxes?

25	x	6
<hr/>		
150		

factor: multiplied by factor equals product

25	x	6	=	150
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quotient: result of dividing a number by a divisor
Example: Divide the six squares into groups of two.

 • 6 squares in groups of two = 3 groups
 • 6 divided by 2 equals 3

dividend: divided by divisor equals quotient

6	÷	2	=	3
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Example: Max divides 12 oranges equally into 3 bowls. How many oranges are in each bowl?
Answer: 4 oranges

 $12 \div 3 = 4$

COUNTING MONEY

Example: $\$1.00 + 25c + 25c + 1c + 1c = \1.52

SAMPLE PAGE -- Page 1 of 2

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