

# Place Value

HT	TT	Th	H	T	O
hundred thousands	ten thousands	thousands	hundreds	tens	ones



The comma says "thousand."

Standard Form- 243,967

Word Form – two hundred forty-three thousand, nine hundred sixty-seven

Expanded Form-  $200,000 + 40,000 + 3,000 + 900 + 60 + 7$

- one – 1
- two – 2
- three – 3
- four – 4
- five – 5
- six – 6
- seven – 7
- eight – 8
- nine – 9
- ten – 10
- eleven – 11
- twelve – 12
- thirteen – 13
- fourteen – 14
- fifteen – 15
- sixteen – 16
- seventeen – 17
- eighteen – 18
- nineteen – 19
- twenty – 20
- thirty – 30
- forty – 40
- fifty – 50
- sixty – 60
- seventy – 70
- eighty – 80
- ninety – 90
- hundred – 100
- thousand – 1000

## Rounding to the NEAREST TEN

0	1	2	3	4	5	6	7	8	9	10
10	11	12	13	14	15	16	17	18	19	20
20	21	22	23	24	25	26	27	28	29	30
30	31	32	33	34	35	36	37	38	39	40
40	41	42	43	44	45	46	47	48	49	50
50	51	52	53	54	55	56	57	58	59	60
60	61	62	63	64	65	66	67	68	69	70
70	71	72	73	74	75	76	77	78	79	80
80	81	82	83	84	85	86	87	88	89	90
90	91	92	93	94	95	96	97	98	99	100

## Rounding to the NEAREST HUNDRED

0	10	20	30	40	50	60	70	80	90	100
100	110	120	130	140	150	160	170	180	190	200
200	210	220	230	240	250	260	270	280	290	300
300	310	320	330	340	350	360	370	380	390	400
400	410	420	430	440	450	460	470	480	490	500
500	510	520	530	540	550	560	570	580	590	600
600	610	620	630	640	650	660	670	680	690	700
700	710	720	730	740	750	760	770	780	790	800
800	810	820	830	840	850	860	870	880	890	900
900	910	920	930	940	950	960	970	980	990	1,000

These are words that remind us to round.

close to

approximately

best estimate

about

# Adding 2-Digit #s

## ① Base Ten Blocks

$$35 + 27 =$$

||| .....  
.....

|| .....  
.....

} Count them!

## ② Partial Sums

$$35 + 27$$

↙ ↘

30 ↙ 5 ↘

+ 20

+ 7

$$50 + 12 = \textcircled{62}$$

## ③ Standard Way

$$35 + 27 =$$

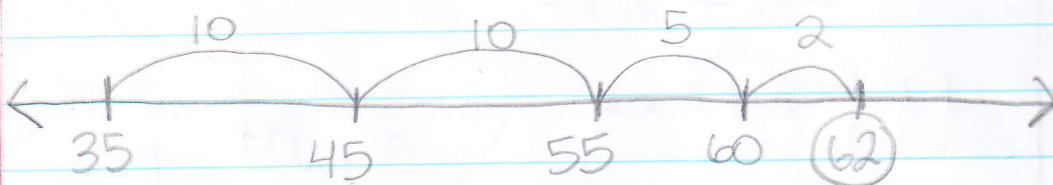
$$\begin{array}{r} 35 \\ + 27 \\ \hline \textcircled{62} \end{array}$$

\* line up places

\* start in ones!

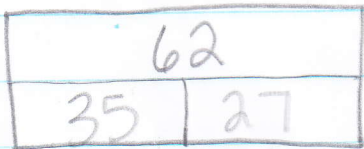
④ Open Number Line

$$35 + 27 =$$













⑤ Strip Diagram

$$35 + 27 =$$



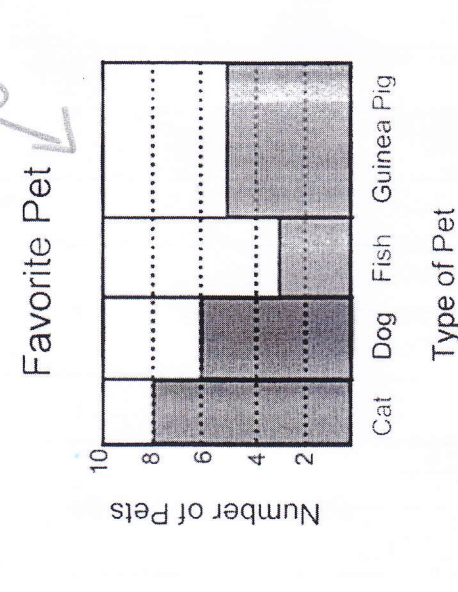
part + part = whole

# Coins

Coin	Front	Back	Value
Penny			1c or \$0.01
Nickel			5c or \$0.05
Dime			10c or \$0.10
Quarter			25c or \$0.25
Half Dollar			50c or \$0.50

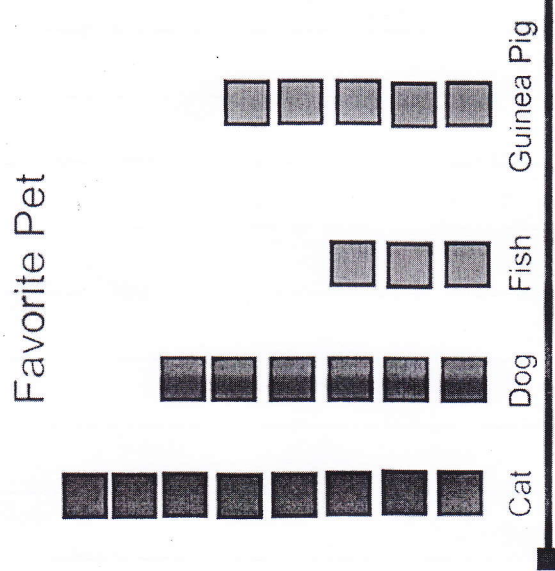
# Types of Graphs

Bar Graph



Frequency Table

Pet	#
Cat	8
Dog	6
Fish	3
Guinea Pig	5



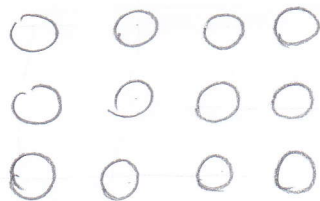
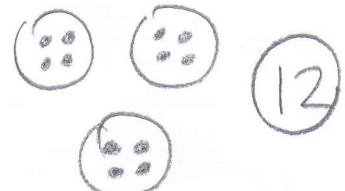
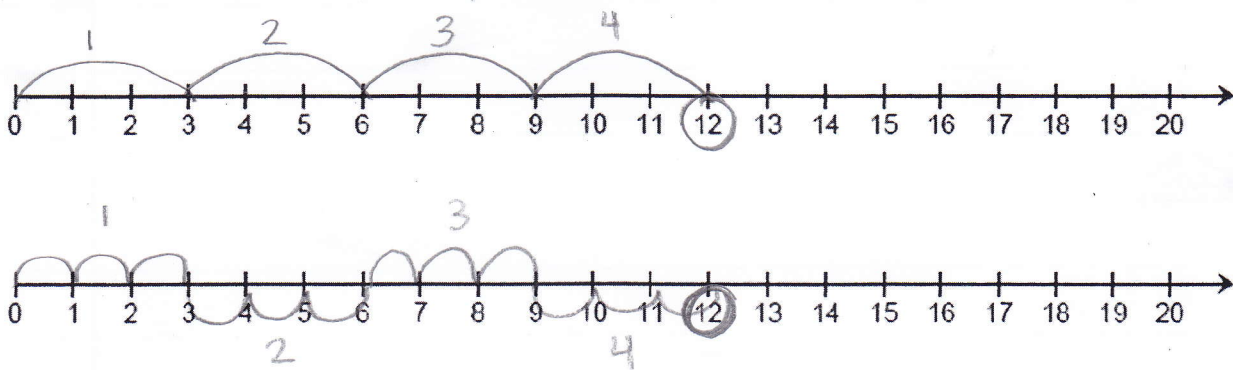
Cat	○○○○○○○○○○
Dog	○○○○○○○○○○
Fish	○○○○
Guinea Pig	○○○○○○○○

Each ○ = 5 pet

Bar Type Graph

Pictograph

# Ways to Multiply

<p>Factors</p> <p>* memorize the fact</p> <p><math>3 \times 4 = 12</math></p>	<p>Array</p> <p><math>3 \times 4</math> rows columns</p> <p>count it! (12)</p> 	<p>Groups</p> <p><math>3 \times 4</math> 3 groups of 4</p>  <p>count it!</p>
<p>Fact Family</p> <p><math>3 \times 4 = 12</math>  <math>4 \times 3 = 12</math>  <math>12 \div 3 = 4</math>  <math>12 \div 4 = 3</math></p>	<p>Repeated Addition</p> <p><math>3 \times 4</math> add 3 four times</p> <p><math>3 + 3 + 3 + 3</math>  <math>\downarrow \quad \downarrow</math>  <math>6 + 6 = 12</math></p>	<p>Skip Counting</p> <p><math>3 \times 4</math> skip count by 3s four times</p> <p><math>\frac{3}{1}, \frac{6}{2}, \frac{9}{3}, \frac{12}{4}</math></p>
<p>Number Line</p> <p><math>3 \times 4 \rightarrow</math> jump 3 spaces 4 times</p> 		

# Types of Word Problems

Addition +		Subtraction -									
Combining Joining Together Finding the sum Finding the whole		Separating Comparing Finding the difference Finding a part									
<table border="1" style="margin: auto;"> <tr> <td colspan="2">?</td> </tr> <tr> <td>Part</td> <td>Part</td> </tr> </table>		?		Part	Part	<table border="1" style="margin: auto;"> <tr> <td colspan="2">Whole</td> </tr> <tr> <td>Part</td> <td>?</td> </tr> </table>		Whole		Part	?
?											
Part	Part										
Whole											
Part	?										
Multiplication $\times$		Division $\div$									
Putting into <u>equal</u> groups Finding the <u>product</u> Combining <u>equal</u> groups		Separating into <u>equal</u> groups Finding the <u>quotient</u>									
Repeated Addition Array Lattice Standard algorithm	Draw a picture (equal groups) Skip Counting (number line) Partial Products	Repeated Subtraction Draw a picture (equal groups)									



# Operation Answers

Sum

Product

difference

quotient

the answer  
you get  
when you

add!

$$3 + 4 = \textcircled{7}$$

The sum  
of 3 and  
4 is 7.

the answer  
you get  
when you

subtract!

$$9 - 3 = \textcircled{6}$$

The difference  
of 9 and 3  
is 6.

$$8 \times 2 = \textcircled{16}$$

The product  
of 8 and 2  
is 16.

$$14 \div 2 = \textcircled{7}$$

The quotient  
of 14 and 2  
is 7.


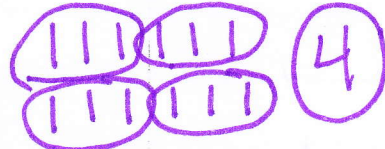
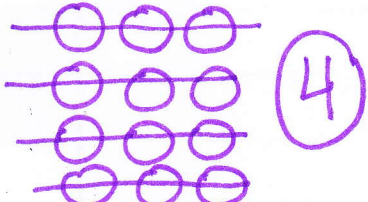
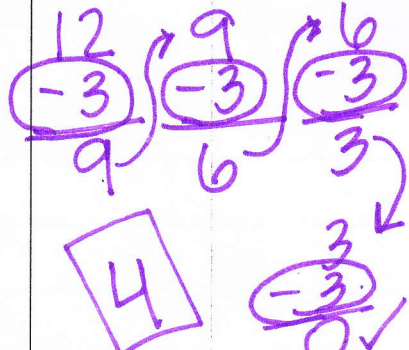
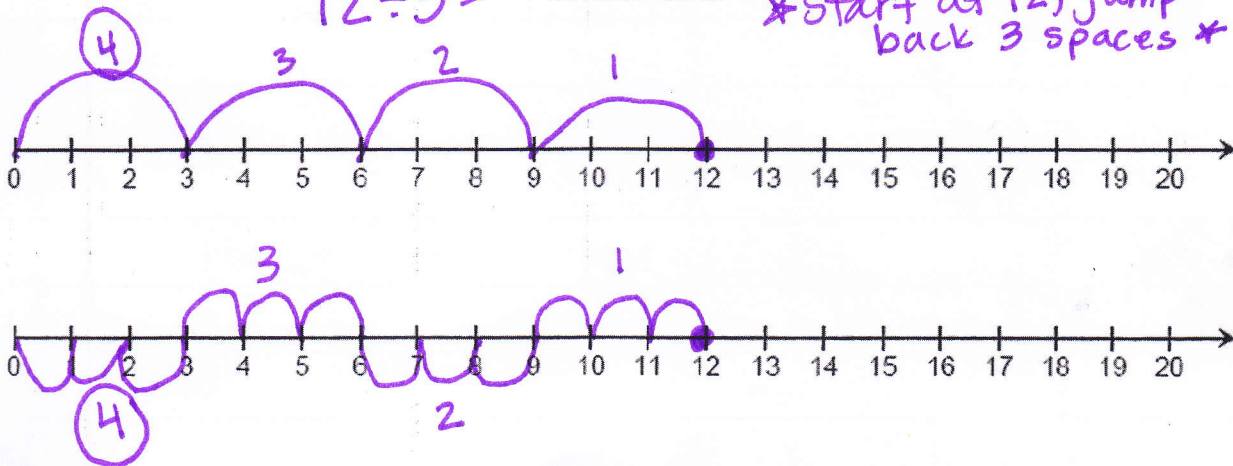
the answer  
you get  
when you

multiply!

the answer  
you get  
when you

divide!

# Ways to Divide

<p>Division</p> <p>* memorized the fact</p> $12 \div 3 = 4$	<p>Make Groups</p> $12 \div 3 = 4$ <p>* make 3 groups</p> <p>* share 12 equally in groups</p> 	<p>Start with the total</p> $12 \div 3 = 4$ <p>• start with 12</p> <p>• make groups of 3</p> 
<p>Array</p> $12 \div 3 = 4$ <p>* make rows of 3</p> 	<p>Fact Family</p> $12 \div 3 = 4$ $3 \times 4 = 12$ $4 \times 3 = 12$ $12 \div 4 = 3$	<p>Repeated Subtraction</p> $12 \div 3 = 4$ 
<p>Number Line</p> <p><math>12 \div 3 =</math> * start at 12, jump back 3 spaces *</p> 		

## Divisibility Rule of 2

- A number is divisible by 2 if the ones place is 0, 2, 4, 6, or 8.

- Numbers divisible by 2:

64    98    412    7,940  
80, 576

- Numbers NOT divisible by 2:

63    97    411    7,939  
80, 575

# 2 Digit Multiplication

## Repeated Addition

$$36 \times 5 = \square$$

• add 36 five times

$$36 + 36 + 36 + 36 + 36$$

$$\begin{array}{r} 36 \\ +36 \\ \hline 72 \end{array} \rightarrow \begin{array}{r} 72 \\ +36 \\ \hline 108 \end{array} \rightarrow \begin{array}{r} 108 \\ +36 \\ \hline 144 \\ +36 \\ \hline 180 \end{array}$$

## Standard Algorithm

$$36 \times 5 = \square$$

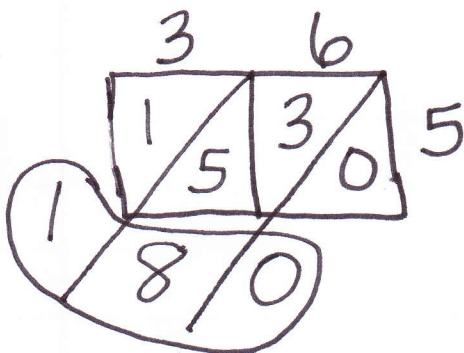
① Up       $\begin{array}{r} +3 \\ 36 \\ \times 5 \\ \hline \end{array}$

② Over

③ Add       $\begin{array}{r} 180 \end{array}$

## Lattice

$$36 \times 5 = \square$$



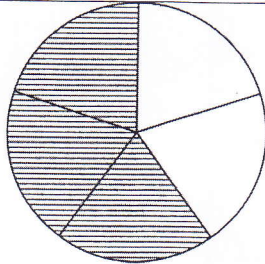
## Partial Products

$$36 \times 5 = \square$$

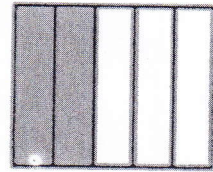
$$\begin{array}{r} 36 \rightarrow 30 \quad 6 \\ \times 5 \quad \times 5 \quad \times 5 \\ \hline 180 = 150 + 30 \end{array}$$

$$\frac{2}{5}$$

Two-fifths  
Two out of five



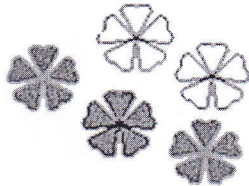
Not shaded  
Fractions in a whole



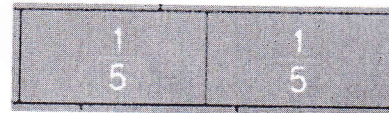
Shaded  
Fractions in a whole

$$\frac{1}{5} + \frac{1}{5}$$

Unit Fractions



Fractions in a set



Fraction Tiles



Number Line

# Multiplication Facts

$0 \times 0 = 0$ $0 \times 1 = 0$ $0 \times 2 = 0$ $0 \times 3 = 0$ $0 \times 4 = 0$ $0 \times 5 = 0$ $0 \times 6 = 0$ $0 \times 7 = 0$ $0 \times 8 = 0$ $0 \times 9 = 0$ $0 \times 10 = 0$ $0 \times 11 = 0$ $0 \times 12 = 0$	$1 \times 0 = 0$ $1 \times 1 = 1$ $1 \times 2 = 2$ $1 \times 3 = 3$ $1 \times 4 = 4$ $1 \times 5 = 5$ $1 \times 6 = 6$ $1 \times 7 = 7$ $1 \times 8 = 8$ $1 \times 9 = 9$ $1 \times 10 = 10$ $1 \times 11 = 11$ $1 \times 12 = 12$	$2 \times 0 = 0$ $2 \times 1 = 2$ $2 \times 2 = 4$ $2 \times 3 = 6$ $2 \times 4 = 8$ $2 \times 5 = 10$ $2 \times 6 = 12$ $2 \times 7 = 14$ $2 \times 8 = 16$ $2 \times 9 = 18$ $2 \times 10 = 20$ $2 \times 11 = 22$ $2 \times 12 = 24$	$3 \times 0 = 0$ $3 \times 1 = 3$ $3 \times 2 = 6$ $3 \times 3 = 9$ $3 \times 4 = 12$ $3 \times 5 = 15$ $3 \times 6 = 18$ $3 \times 7 = 21$ $3 \times 8 = 24$ $3 \times 9 = 27$ $3 \times 10 = 30$ $3 \times 11 = 33$ $3 \times 12 = 36$	$4 \times 0 = 0$ $4 \times 1 = 4$ $4 \times 2 = 8$ $4 \times 3 = 12$ $4 \times 4 = 16$ $4 \times 5 = 20$ $4 \times 6 = 24$ $4 \times 7 = 28$ $4 \times 8 = 32$ $4 \times 9 = 36$ $4 \times 10 = 40$ $4 \times 11 = 44$ $4 \times 12 = 48$
$5 \times 0 = 0$ $5 \times 1 = 5$ $5 \times 2 = 10$ $5 \times 3 = 15$ $5 \times 4 = 20$ $5 \times 5 = 25$ $5 \times 6 = 30$ $5 \times 7 = 35$ $5 \times 8 = 40$ $5 \times 9 = 45$ $5 \times 10 = 50$ $5 \times 11 = 55$ $5 \times 12 = 60$	$6 \times 0 = 0$ $6 \times 1 = 6$ $6 \times 2 = 12$ $6 \times 3 = 18$ $6 \times 4 = 24$ $6 \times 5 = 30$ $6 \times 6 = 36$ $6 \times 7 = 42$ $6 \times 8 = 48$ $6 \times 9 = 54$ $6 \times 10 = 60$ $6 \times 11 = 66$ $6 \times 12 = 72$	$7 \times 0 = 0$ $7 \times 1 = 7$ $7 \times 2 = 14$ $7 \times 3 = 21$ $7 \times 4 = 28$ $7 \times 5 = 35$ $7 \times 6 = 42$ $7 \times 7 = 49$ $7 \times 8 = 56$ $7 \times 9 = 63$ $7 \times 10 = 70$ $7 \times 11 = 77$ $7 \times 12 = 84$	$8 \times 0 = 0$ $8 \times 1 = 8$ $8 \times 2 = 16$ $8 \times 3 = 24$ $8 \times 4 = 32$ $8 \times 5 = 40$ $8 \times 6 = 48$ $8 \times 7 = 56$ $8 \times 8 = 64$ $8 \times 9 = 72$ $8 \times 10 = 80$ $8 \times 11 = 88$ $8 \times 12 = 96$	$9 \times 0 = 0$ $9 \times 1 = 9$ $9 \times 2 = 18$ $9 \times 3 = 27$ $9 \times 4 = 36$ $9 \times 5 = 45$ $9 \times 6 = 54$ $9 \times 7 = 63$ $9 \times 8 = 72$ $9 \times 9 = 81$ $9 \times 10 = 90$ $9 \times 11 = 99$ $9 \times 12 = 108$
$10 \times 0 = 0$ $10 \times 1 = 10$ $10 \times 2 = 20$ $10 \times 3 = 30$ $10 \times 4 = 40$ $10 \times 5 = 50$ $10 \times 6 = 60$ $10 \times 7 = 70$ $10 \times 8 = 80$ $10 \times 9 = 90$ $10 \times 10 = 100$ $10 \times 11 = 110$ $10 \times 12 = 120$	$11 \times 0 = 0$ $11 \times 1 = 11$ $11 \times 2 = 22$ $11 \times 3 = 33$ $11 \times 4 = 44$ $11 \times 5 = 55$ $11 \times 6 = 66$ $11 \times 7 = 77$ $11 \times 8 = 88$ $11 \times 9 = 99$ $11 \times 10 = 110$ $11 \times 11 = 121$ $11 \times 12 = 132$	$12 \times 0 = 0$ $12 \times 1 = 12$ $12 \times 2 = 24$ $12 \times 3 = 36$ $12 \times 4 = 48$ $12 \times 5 = 60$ $12 \times 6 = 72$ $12 \times 7 = 84$ $12 \times 8 = 96$ $12 \times 9 = 108$ $12 \times 10 = 120$ $12 \times 11 = 132$ $12 \times 12 = 144$		