Accelerated Math Notes
Chapter 6
Find Percents of a Number
Using Mental Math Strategies

125% of 24

10% of 450

40% of 15

51% of 6000

Use (unit) fractions to find the percent of a #
numerator of 1

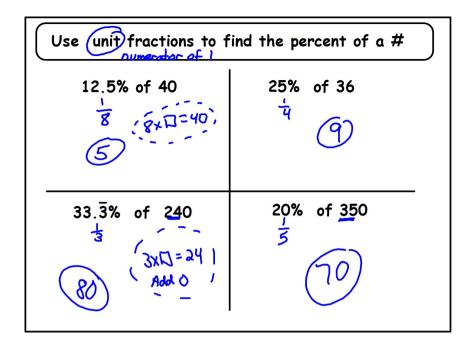| 12.5% of 40	25% of 36
$\frac{1}{8}$ ($8 \times \square = 40$)	$\frac{1}{4}$
⑤	⑨
33.$\overline{3}$% of 240	20% of 350
$\frac{1}{3}$	$\frac{1}{5}$
($3 \times \square = 24$) Add 0	
⑧⓪	⑦⓪

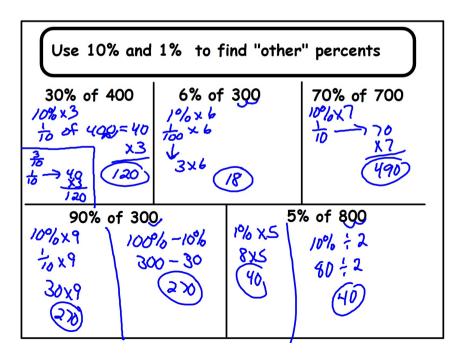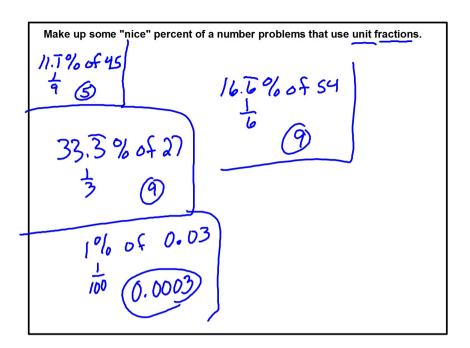
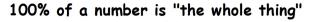Use 10% and 1% to find the percent of a number easily.

$10\% = \frac{1}{10}$ which means to ÷ by 10
        (move decimal point 1 place left)

$1\% = \frac{1}{100}$ which means to ÷ by 100
        (move decimal point 2 places left)

10% of 30	1% of 5000	10% of 700
$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{10}$
③	⑤⓪	⑦⓪

Use 10% and 1% to find "other" percents

30% of 400	6% of 300	70% of 700
10% × 3	1% × 6	10% × 7
$\frac{1}{10}$ of 400 = 40	$\frac{1}{100} \times 6$	$\frac{1}{10} \rightarrow 70$
× 3	↓	× 7
$\frac{3}{10}$	3 × 6	④⑨⓪
$\frac{1}{10} \rightarrow \frac{40}{\times 3}$ ⑫⓪	⑱	
$\frac{120}{}$		

90% of 300		5% of 800	
10% × 9	100% − 10%	1% × 5	10% ÷ 2
$\frac{1}{10} \times 9$	300 − 30	8 × 5	80 ÷ 2
30 × 9	②⑦⓪	④⓪	④⓪
②⑦⓪			

Make up some "nice" percent of a number problems that use unit fractions.

$11.\overline{1}\% \text{ of } 45$
$\frac{1}{9}$ ⑤

$16.\overline{6}\% \text{ of } 54$
$\frac{1}{6}$
⑨

$33.\overline{3}\% \text{ of } 27$
$\frac{1}{3}$ ⑨

$1\% \text{ of } 0.03$
$\frac{1}{100}$ (0.0003)

100% of a number is "the whole thing"

To find 200% of a number, double the number.
To find 300% of a number, triple the number...

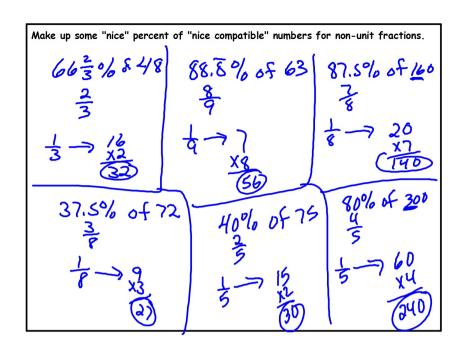| 200% of 70	900% of 400	300% of 2000
2 × 70	9 × 400	100% × 3
(140)	(3600)	2000 × 3
		(6000)

Remember

If $\frac{1}{3}$ of a number is 8, then $\frac{2}{3}$ (<u>two</u> thirds) of the number will be double that (2 x 8 or 16).

If $\frac{1}{8}$ of a number is 10, then $\frac{7}{8}$ (<u>seven</u> eighths) of the number will be 7 times that number (7 x 10 or 70)

62.5% of 560	60% of 1500
$\frac{5}{8}$	$\frac{3}{5}$
$\frac{1}{8} \rightarrow 70$ ×5	$\frac{1}{5} \text{ of } 1500 = 300$ ×3
(350)	(900)
$66\frac{2}{3}\%$ of 1800	75% of 240
$\frac{2}{3}$	$\frac{3}{4}$
$\frac{1}{3} \rightarrow 600$ ×2	$\frac{1}{4} \rightarrow 60$ ×3
(1200)	(180)

Make up some "nice" percent of "nice compatible" numbers for non-unit fractions.

$66\frac{2}{3}\%$ of 48
$\frac{2}{3}$
$\frac{1}{3} \rightarrow \frac{16}{\times 2}$
(32)

$88.\overline{8}\%$ of 63
$\frac{8}{9}$
$\frac{1}{9} \rightarrow 7$
$\times 8$
(56)

87.5% of 160
$\frac{7}{8}$
$\frac{1}{8} \rightarrow \frac{20}{\times 7}$
(140)

37.5% of 72
$\frac{3}{8}$
$\frac{1}{8} \rightarrow \frac{9}{\times 3}$
(27)

40% of 75
$\frac{2}{5}$
$\frac{1}{5} \rightarrow \frac{15}{\times 2}$
(30)

80% of 300
$\frac{4}{5}$
$\frac{1}{5} \rightarrow \frac{60}{\times 4}$
(240)

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1) The original price of an item was $36. It is marked 25% off. What is the sale price?

25% of 36
$\frac{1}{4}$ $9 off
$\frac{36}{-9}$
($27)

(OR) Save $25\% \rightarrow$ pay 75%
75% of 36
$\frac{3}{4}$
$\frac{1}{4} \rightarrow \frac{9}{\times 3} / 27$

2) How much sales tax will you pay on a $18,000 car if sales tax is 10%?

10% of 18000
$\frac{1}{10}$
($1800)

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3) Enrollment at LMS was 480 students last year. This year it decreased by 12.5%. How many students are at LMS this year?

12.5% of 480
$\frac{1}{8}$ 60 student decrease
$\frac{480}{-60}$
(420 students)

4) A store marks an item up $33\frac{1}{3}\%$. If they buy an item for $18, how much will they mark it up?

$33\frac{1}{3}\%$ of 18
$\frac{1}{3}$ ($6 markup)

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5) Mr. Easton plans to leave a 20% tip on his $25 meal. How much will the tip be?

20% of 25
$\frac{1}{5}$ ($5)

6) Sara's allowance is increased by 12.5%. If her present allowance is $16, how much is her new allowance?

12.5% of 16
$\frac{1}{8}$ $2 inc.
$\frac{16}{+2}$
($18)

7) Tim's monthly salary of $4,000 is going to increase 1% next month. How much will his salary increase?

1% of 4000

$\frac{1}{100}$

($40 inc.)

8) The dress Hannah wants to buy has been discounted from $80 to $60. What percent discount is this?

$\begin{array}{r} 80 \\ -60 \\ \hline 20 \end{array}$ off

$\frac{discount}{orig\ price}$ $\frac{20}{80} = \frac{1}{4}$

(25% off)

We can use combinations of these "nice" percents to find the percent of a number.

15% of 400	51% of 300	110% of 60
10% + 5%	50% + 1%	100% + 10%
40 + 20	150 + 3	60 + 6
(60)	(153)	(66)
0.5% of 4800	11% of 20	301% of 8000
1% ÷ 2	10% + 1%	300% + 1%
48 ÷ 2	2 + .2	24000 + 80
(24)	(2.2)	(24080)

More Examples...

How many different ways can you find to calculate (exact answer)?

40% of 4500