



## Warm Up Grade 8

Fill in the chart

Feb. 12

Percent	Decimal	Fraction
55%	0. <u>5</u> <u>5</u>	$\frac{11}{20} \stackrel{\times 5}{=} \frac{55}{100}$
14.4%	0.144	$\frac{144}{1000} \stackrel{\div 4}{=} \frac{36}{250} \stackrel{\div 5}{=} \frac{36}{500}$
17%	0.17	$\frac{17}{100}$
65%	0.65	$\frac{65}{100} \stackrel{\div 5}{=} \frac{13}{20}$
150%	1.5	$\frac{150}{100} = \frac{15}{10} = \frac{3}{2}$

$$10.9\% = \frac{10.9 \times 10}{100 \times 10} = \boxed{\frac{109}{1000}}$$

↓ decimal

0.109 ↑ place values  
↑ thousandths

$$\frac{109}{1000}$$

$$7.25\%$$

$$\frac{7.25}{100} \times 100 = \frac{725 \div 25}{10000 \div 25} = \frac{29}{400}$$

Not  
a fraction

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1. Hundreds grid

Show 100% → shade in all squares  
 1% → shade in one square

2. Show 0% → don't shade any in.

$$3. \frac{1}{5} = \frac{20}{100} \text{ or } 20\%$$

$$\star \frac{1}{5} = 0.2$$

$$0.2\% \text{ or } 0.002$$

$\frac{1}{5}\%$  is less than 1%,

so they are not the same

5. In Ex 3, you could solve without finding percent, because you could estimate

$$\frac{23\frac{1}{2}}{30} \approx \frac{24}{30} = \frac{8}{10}$$

$$\frac{31\frac{1}{2}}{40} \approx \frac{32}{40} = \frac{8}{10} \Rightarrow \text{has smaller pieces, therefore is greater}$$

b	Fraction	Decimal	Percent
a)	$\frac{50}{100}$	0.50	50%
★ b)	$\frac{36}{100} = \frac{18}{50} = \frac{9}{25}$	0.36	36%
★ c)	$\frac{87}{100} =$	0.87	87%
d)	$\frac{4}{100} = \frac{1}{25}$	0.04	4%

$$\underbrace{0.35}_{\text{blue}} \% \xrightarrow{\div 100 \text{ to get decim.}} 0.0035$$

7.	Fraction	Decimal
★ a) 3%	$\frac{3}{100}$	0.03
b) 51	$\frac{51}{100}$	0.51
★ c) 98%	$\frac{98}{100} = \frac{49}{50}$	0.98
d) 29%	$\frac{29}{100}$	0.29

8.	Fraction	Decimal	Percent
★ a)	$\frac{12.5}{100} = \frac{125}{1000} = \frac{1}{8}$	0.125	12.5%
★ b)	$\frac{8525}{10000}$	0.8525	85.25%
★ c)	$\frac{3475}{10000}$	0.3475	34.75%

9	Fraction	Decimal
★ a) 73.5%	$\frac{735}{1000}$ ( $\frac{735}{1000}$ )	0.735
b) 21.25%	$\frac{2125}{10000}$ ( $\frac{2125}{10000}$ )	0.2125
★ c) $8\frac{3}{4}\%$ 8.75%	$\frac{875}{10000}$ ( $\frac{8.75}{100}$ )	0.0875
d) $1\frac{1}{5}\%$ 1.2%	$\frac{12}{1000}$ ( $\frac{1.2}{100}$ )	0.012

	Fraction	Decimal
12 a) 0.25%	$\frac{0.25}{100} = \frac{25}{10000}$	0.0025
★ b) 0.6%	$\frac{0.6}{100} \xrightarrow{\times 10} \frac{6}{1000} \xrightarrow{\times 10} \frac{60}{10000} = \frac{3}{500}$	0.006
c) 0.5%	$\frac{0.5}{100} = \frac{5}{1000}$	0.005
★ d) 0.38%	$\frac{0.38}{100} \xrightarrow{\times 100} \frac{38}{10000}$	0.0038
13.		Decimal      Percent
★ a) $\frac{2}{300} = \frac{1}{150}$		0.00667      0.667%
b) $\frac{18}{400} \div 4 = \frac{4.5}{100}$		0.045      4.5%
★ c) $\frac{7}{500}$		0.014      1.4%
d) $\frac{8}{250}$		0.032      3.2%

	Fraction	Percent
14. a) 0.345	$\frac{345}{1000}$	34.5%
★ b) 0.0023	$\frac{0.23}{100}$ $\left(\frac{23}{10000}\right)$	0.23%
★ c) 0.1825	$\frac{18.25}{100}$ $\left(\frac{1825}{10000}\right)$	18.25%
d) 0.007	$\frac{0.7}{100}$ $\left(\frac{7}{1000}\right)$	0.7%

★ 1b) vince 82.5%

cal Junita  $\frac{15}{18} = \frac{5}{6} = 83.3\%$

vince did better

Recall that when the whole is 1.0, you know that:

~~1.00~~ Decima)

$$100\% = 1.0$$

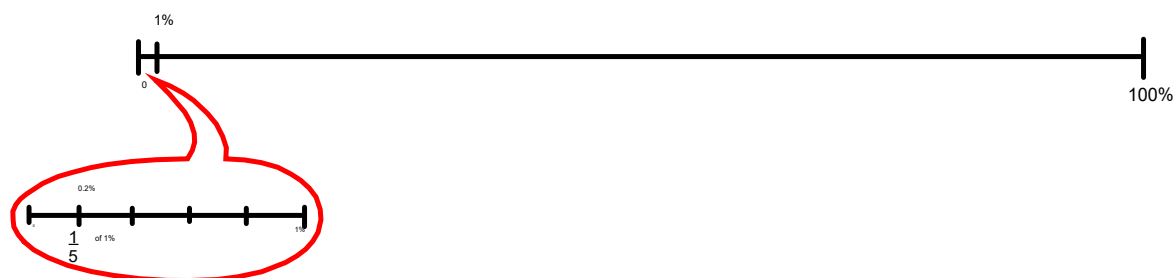
$$10\% = 0.1$$

$$1\% = 0.01$$

We can extend the pattern to write percents less than 1% as decimals:

$$0.1\% = 0.001$$

$$0.5\% = 0.0005$$





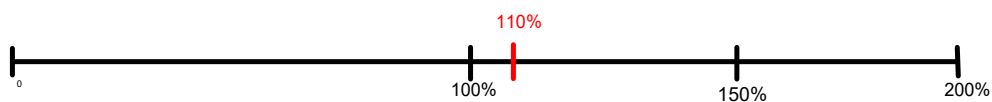
We can extend the pattern to write percents greater than 100% as decimals:

$$101\% = 1.01$$

$$110\% = 1.10$$

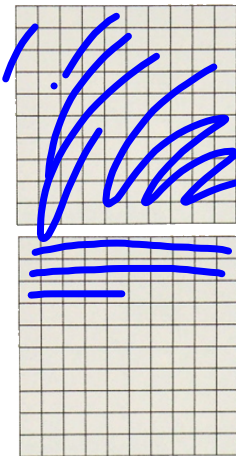
$$150\% = 1.50$$

$$200\% = 2.00$$

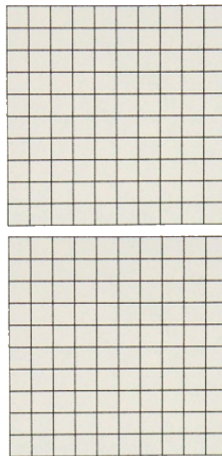


1) One hundred chart represents 100%. Shade hundred charts to show each percent. Write each percent as a fraction and as a decimal.

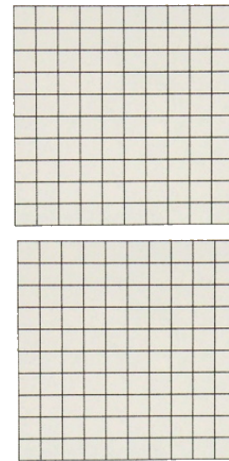
a) 125%



b) 150%



c) 210%



2) Write each percent as a decimal and draw a number line to show the percent.

a) 175%

b) 0.5%

### Finding Percents of a Number

What does "of" mean in math?

Of means to multiply

## Mentally

So how do you find the percent of a number?

How many different methods can you use to find :

(a) 50% of 70 = 35    (b) 10% of 120 = 12    (c) 25% of 80 = 20    (d) 57% of 30 = 17.10

↓ like ÷ by 2

$$\frac{50}{100} = \frac{1}{2}$$

↳ like ÷ by 10

$$\frac{10}{100} = \frac{1}{10}$$

↳ like ÷ by 4

$$\frac{25}{100} = \frac{1}{4}$$

$$50\% \text{ of } 30 = 15$$

× 1% of 30 = 0.30

$$7\% = 2.10$$

$$\frac{1}{100} = \text{divide by } 100$$

What percents can you find mentally?

Pass out and discuss notes, on next slide

## Estimating and Mentally Calculating Percents

There are several percents that you can figure out without a calculator.

<b>100 % - 100% of a number is the number itself.</b>
<b>50% - You can easily find 50% of a number by dividing the number by 2.</b> Ex. 50% of 68 = 34
<b>25% - You can easily find 25% of number by dividing the number by 4.</b> Ex. 25% of 64 = 16
<b>10% - You can easily find 10% of a number by dividing the number by 10.</b> Ex. 10% of 678 = 67.8 <i>(move decimal 1 place left)</i>
<b>1% - You can easily find 1% of a number by dividing the number by 100.</b> Ex. 1% of 52.8 = 0.528 <i>(move decimal 2 places left)</i>
<b>33 1/3 % - You can easily find 33 1/3% of a number by dividing the number by 3.</b>

So if you can find the above percent, then there are also many, many more that you can find.

**How can you find:**

- 5% - find 10%, then divide by 2.**
- 20% - Find 10%, then multiply by 2.**
- 30% - find 10% then multiply by 3.**
- 60% - find 10% then multiply by 6.**
- 2% - find 1% then multiply by 2.**
- 4% - find 1% then multiply by 4.**
- 11% - find 10%, find 1% then add the 2 answers**
- 15% - Find 10%, then find 5% then add the 2 answers.**
- 75% - find 25% then multiply by 3.**
- 90% - find 100%, then find 10% and subtract the answers.**
- 55% - find 50%, then find 5% and add the answers.**
- 150% - find 100%, then find 50% and add the answers.**

If you have to estimate a percent, change the percent to the closest number that you can find mentally, or change the number itself to an easy number to work with.

$30\%$  of  $50 =$

$10\%$  of  $50 = 5$

$\rightarrow$  like  $\div$  by 10

$\times 3$

$\times 3$

$30\%$  of  $50 = 15$

$$a) 40\% \text{ of } 80$$

$$\begin{array}{l} 10\% \text{ of } 80 = 8 \\ \downarrow \\ \text{like } 80 \div 10 \\ \left. \begin{array}{l} \text{ } \\ \text{ } \end{array} \right\} \times 4 \\ 40\% \text{ of } 80 = 32 \end{array}$$

$$b) 75\% \text{ of } 120$$

↓  
multiple of 25%

$$\begin{array}{l} 25\% \text{ of } 120 = 30 \\ \text{like } \div \text{ by } 4 \quad \times 3 \\ \left. \begin{array}{l} \text{ } \\ \text{ } \end{array} \right\} \times 3 \\ 75\% \text{ of } 120 = 90 \end{array}$$

# Class / Homework

calculator

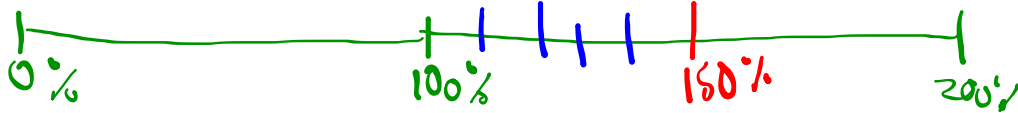
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No calculators  
Reduce Fractions

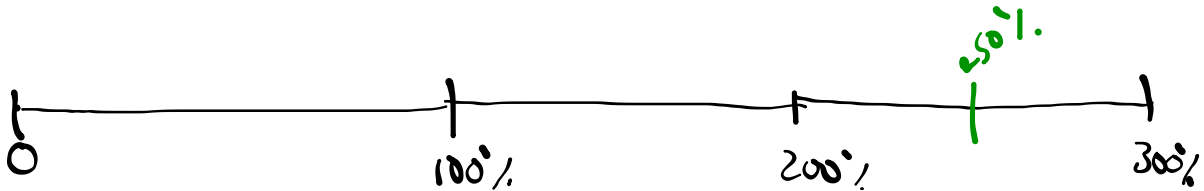
No calculators  
Show all work

No # lines  
or diagrams  
just  
show the  
math

5a)  $120\% = 1.2$



5b)  $250\% = 2.5$



5d)  $0.3\% = 0.003$

