



Warm Up Grade 8

Feb. ~~8~~⁹ 2018

Fill in the chart

Percent	Decimal	Fraction
55%	0.55	$\frac{11 \times 5}{20 \times 5} = \frac{55}{100}$
14.4%	0.144	$\frac{144}{1000} = \frac{72}{500} = \frac{36}{250} = \frac{18}{125}$
17%	0.17	$\frac{17}{100}$
65%	0.65	$\frac{65 \div 5}{100 \div 5} = \frac{13}{20}$
150%	1.5	$\frac{15}{10} = \frac{3}{2}$

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

↓ decimal
0.109 ↑ place value
↑ thousandths
 $\frac{109}{1000}$

pg.239 #1-3, 5-9, 12-14

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%
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%	$\frac{735}{1000}$ ($\frac{73.5}{100}$)	0.735
b) 21.25%	$\frac{2125}{10000}$ ($\frac{21.25}{100}$)	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%	$\frac{0.6}{100} \xrightarrow{\times 10} = \frac{6}{1000} \xrightarrow{\times 10} = \frac{3}{500}$	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%

★ 16) vince 82.5%

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

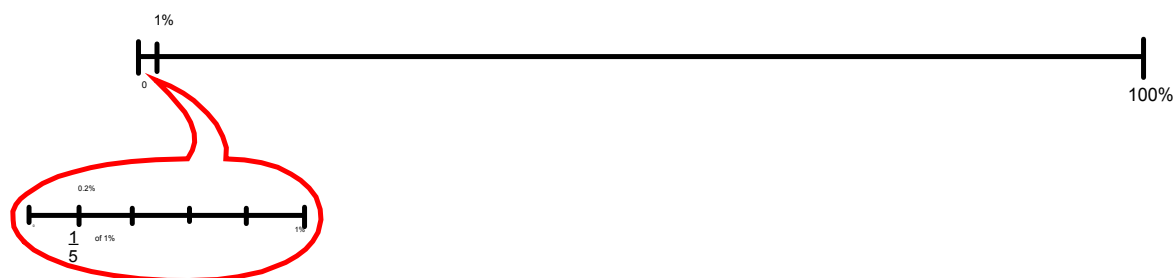
Junita did better

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

$$\begin{aligned} 100\% &= 1.0 \\ 10\% &= 0.1 \\ 1\% &= 0.01 \end{aligned}$$

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

$$\begin{aligned} 0.1\% &= 0.001 \\ 0.5\% &= 0.005 \end{aligned}$$



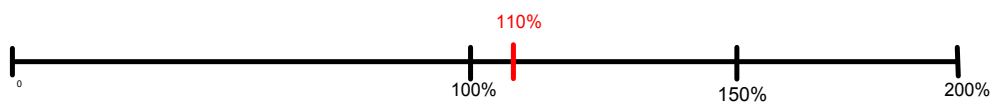
We can extend the pattern to write percents greater than 100% as decimals:

$$101\% = 1.01$$

$$110\% = 1.10$$

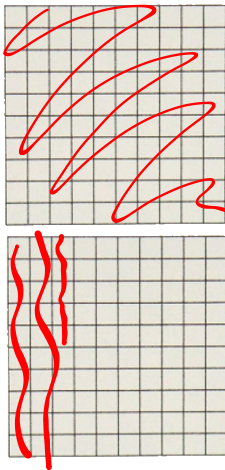
$$150\% = 1.50$$

$$200\% = 2.00 \text{ or } 2$$

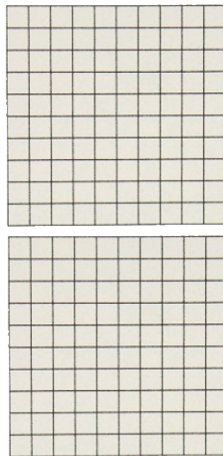


1) One hundred chart represents 100%. Shade hundred charts to show each percent. Write each percent as a fraction and as a decimal.

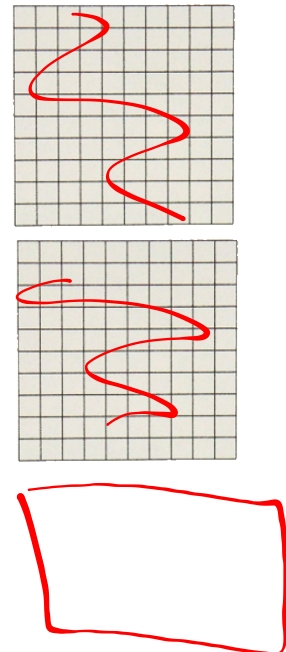
a) 125%



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

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

$$\frac{1}{2} \text{ of } 70$$

(like ÷ # by 2)

$$50\% \text{ of } 70 = 35$$

(b) 10% of 120

$$\frac{10}{100} = \frac{1}{10} \leftarrow \begin{array}{l} \text{like} \\ \div \text{ by} \\ 10 \end{array}$$

÷ by 10

→ move decimal
1 place to left

$$10\% \text{ of } 120 = 12$$

(c) 25% of 80

$$\frac{25}{100} = \frac{1}{4} \leftarrow \begin{array}{l} \text{like} \\ \div \text{ by} \\ 4 \end{array}$$

$$25\% \text{ of } 80 = 20$$

(d) 57% of 30

What percents can you find mentally?

Pass out and discuss notes, on next slide

$$50 \quad 7 \begin{matrix} \nearrow^5 \\ \rightarrow 2 \\ \searrow_1 \end{matrix}$$

57 % of 30

$$\begin{array}{r} 50\% \text{ of } 30 = 15.0 \\ 5\% \text{ of } 30 = 1.5 \\ 2\% \text{ of } 30 = 0.6 \\ \hline 17.1 \end{array}$$

$$\begin{array}{l} 10\% \text{ of } 30 = 3 \quad \downarrow \div 2 \\ 5\% \text{ of } 30 = 1.5 \end{array}$$

$$\begin{array}{l} 1\% \text{ of } 30 = 0.30 \\ \frac{1}{100} \text{ like } \div \text{ by } 100 \\ 2\% \text{ of } 30 = 0.60 \end{array}$$

Estimating and Mentally Calculating Percents

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

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

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

$$\begin{array}{l} 10\% \text{ of } 50 = 5 \\ \times 3 \quad \quad \quad \times 3 \\ \hline 30\% \text{ of } 50 = 15 \end{array}$$

Class / Homework

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calculator

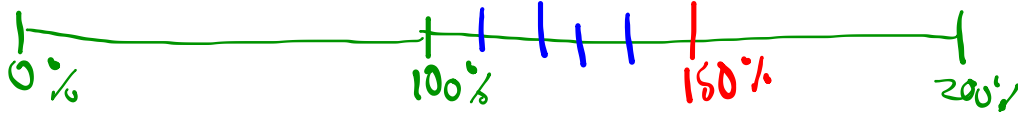
#5, #6, #10, #11

No # lines or diagrams
just show the math

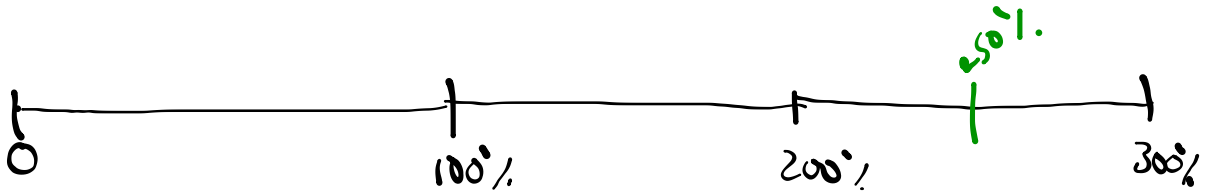
No calculators
Reduce Fractions

No calculators
Show all work

5a) $120\% = 1.2$



5b) $250\% = 2.5$



5d) $0.3\% = 0.003$

