Math 8 — 8.1 Understanding Large & Small Percents
Pg 256 - 265

Focus: I will

1) Visualize, describe & identify solutions where percents
   a) are less than 1%.
   b) greater than 100%.
   c) include a decimal or fractional %.

Percent
- is out of 100
- another name for hundredths 0.00
- 65% = $\frac{65}{100}$ = 0.65

Fractional percent
- percent that is not a whole number but instead includes a fraction or decimal portion

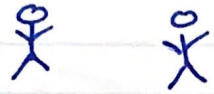
Eg
- 4.5%, $7\frac{3}{8}$%, 125.2%, 0.42%

A percent is a number or ratio expressed as a fraction of 100. It is often denoted using the % percent sign, % or can be abbreviated to pct.

75% can mean you got 75 questions right out of 100 or it can also mean that for you get every 3 questions right out of 4.

Explore & Review (less than 1%)

What percent do you make out of your family.



me Anna

= 1 out of 2 $\Rightarrow \frac{1}{2} \Rightarrow 1 \div 2 \Rightarrow 0.50$

$= 50\%$.

Growing up.

Mom Dad older brother me younger brother

= 1 out of 5 = $\frac{1}{5}$

$1 \div 5 = 0.20 \times 100\% = 20\%$.

What percent do you make out of class?

Class = 26 students = 1 out of 26 students = $\frac{1}{26}$

$1 \div 26 = 0.0385 \times 100\% = 3.85\%$.

↑ fractional percent.

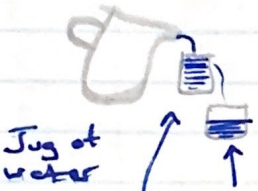
What percent do you make up to all the people at PGSS?

1 student out of 1265 = $\frac{1}{1265} = 1 \div 1265 = 0.00079 = 0.079\%$

↑ less than 1%.

Explore & Review (greater than 100%.)

What does a percent look like when I have "more than I need?"



150%.

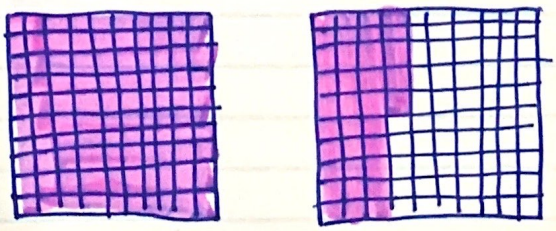
If I have a jug of water and I am filling a cup up and I overflow that cup, I have poured more ~~than~~ than 100% of the water into that ~~cup~~, cup. In this situation, I have poured 150% of my water capacity into a cup. My cup can only hold 100% of its capacity.

Develop Understanding Example 1 Represent % visually using 100 grids

To visualize percents, we can use 100 grids to understand. On a 100 grid, each square represents 1% because there are 100 □ = 100%.

A) If I drank 1 can of orange juice that has 135% of your daily recommended intake of Vit C. how can you represent visually. (PDF for 100 grid attached)

135% = 135 squares : Color 135 squares for 135%. need 2 (100 grids)



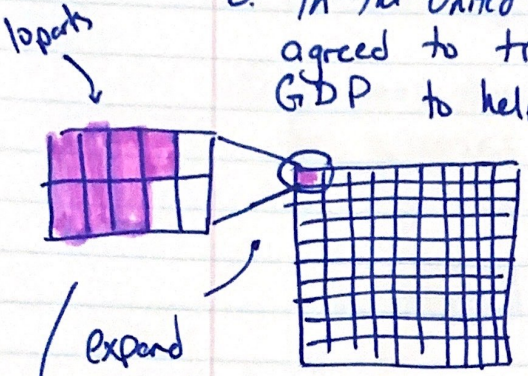
This means you get more than the daily recommended amount.

100%
100 squares

35%
35 squares

B. In the United Nations Millenium Project, rich countries have agreed to try and contribute 0.7% of their yearly GDP to help developing countries.

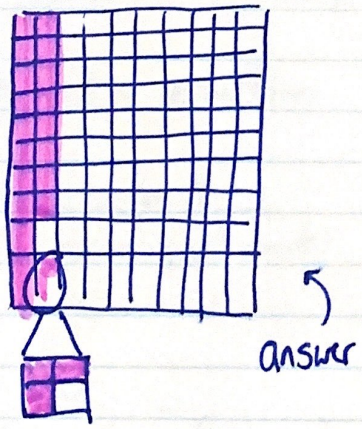
↳ 0.7% is less than 1%. So you are not going to use 1 whole square.



remember 0.7% is the same as $\frac{7}{10}$%. So split magnified square into 10 & color 7

remember 0.7% = $\frac{7}{10}$% ← 7 tenths so we will take a square and make it 7/10

c) If a credit card charges an interest rate of 18 3/4%, what does that visually look like as a percentage?



18 3/4% → only need 1 grid

18 squares & $\frac{3}{4}$ of another

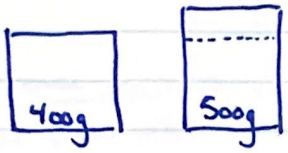
↓

expand 1 square

Example 2 Analyze Percents Greater Than 100%

(refer to pg ~~260~~ 259 ~~for data table~~)

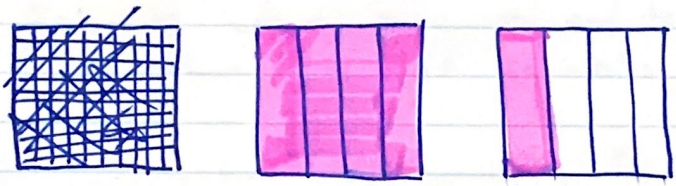
Erin sees these 2 cereal boxes on a shelf while shopping for groceries.



a) The new box, is it really 25% more?

method 1

visually



~~400g or~~ 100%

400g or 100% + 100g or $\frac{1}{4}$ or 25% = 125% or 25% more

~~Little~~ with equation

$$\frac{\text{new amount}}{\text{old or original amt}} = \frac{500g}{400g} = 1.25 \times 100\% = 125\%$$

100% + 25%

original + new

or

$$\frac{\text{difference}}{\text{original}} = \frac{(500-400)}{400} = \frac{100}{400} = 0.25 \times 100\% = 25\%$$

Try Show you know pg 259.

Show you know answers (pg 259)

a) $\frac{\text{Current value}}{\text{original value}} = \frac{\$1600}{\$1000} = 1.6 \times 100\% = 160\%$ increase in value.

b) $\frac{\text{difference in value}}{\text{original value}} = \frac{(1600 - 1000)}{1000} = \frac{600}{1000} = 0.6 \times 100\% = 60\%$

(new, old)

Example 3 Analyze % less than 1% and fractional % (refer to pg. 260) (Pg 260)

a) Estimate which provinces and territories make up less that 1% of Canada's population (pop'n)

If Canada has approximately 36 000 000 people. (100%)
then 10% of the pop'n = 3600 000 ÷10 = 10%
and 1% of the pop'n = 360 000 ÷100 = 1%

So any pop'n less than 360 000 people would be less than 1% of the pop'n.

PEI - 146 400
Yukon - 37 400
NWT - 44 100
Nunavut - 36 900

b) Calculate the approximate percent of Canada's popn and land mass in BC & PEI.

* compare parts to whole (ratios)

$\frac{\text{Pop'n BC}}{\text{pop'n CAN}} = \frac{4683\,100}{35\,851\,800} = 0.131 \times 100\% = 13.1\%$

→

% land mass BC = $\frac{\text{BC land part}}{\text{Can land total}} = \frac{925\,186}{9\,093\,507} = 0.102 \times 100\% = 10.2\%$

% PEI pop'n = $\frac{\text{PEI pop'n part}}{\text{~~PE~~ CND pop'n tot}} = \frac{146\,400}{35\,851\,800} = 0.0041 \times 100\% = 0.41\%$

% PEI land = $\frac{\text{PEI land part}}{\text{CND total land}} = \frac{5660}{9093\,507} = 0.0006 \times 100\% = 0.06\%$

All the % are fractional because of (1) the decimal place and (2) PEI is both <1% (less than 1%)

Practice Q's Pg 262"

#1 (a, b, c, e)
#2
#3
#5
#6
#7
#9
#13
#19 ← challenge