Grade 8

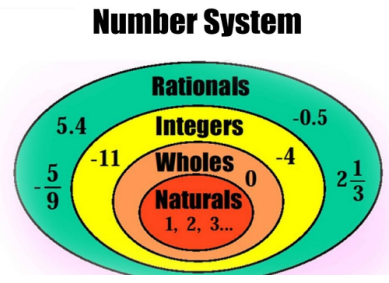
Phase 1 Curriculum



Number--> Number Sense

Describe numbers, ways of representing numbers, relationships among numbers, and number systems.





- Provide examples of percentages (0-100% whole number percentages). (Gr7 N3)
- Record percentages in decimal and fractional forms and vice versa. (Gr7 N3)
- Compare percentage benchmarks to positive fractions, mixed numbers, and decimals. (New)
- Solve percentage, combined problems, and percent-of-a-percent problems. (N3)

- Represent given perfect squares as square regions concretely or pictorially. (N1)
- Determine the squares of given numbers. (N1)
- Determine the square roots of given perfect squares. (N1)
- Identify numbers with square roots within a given range. (New)
- Determine all factors of given perfect squares. (N1)
- Demonstrate if given numbers are perfect squares concretely, pictorially, or symbolically (e.g. prime factorization). (N1)

Ratio is comparing 2 or more quantities with the same unit

Example) Comparing the number of boys in the class to the number of girls in the class

(Both are students)

There are three forms in which you can write a ratio

1) using a colon, 4 : 7

2) using the word "to", 4 to 7

3) as a fraction, $\frac{4}{11}$

fraction is only used if you compare to whole

In each case, it is read as 4 to 7. A ratio does not mean much if you do not know what you are comparing. Therefore, it is always important to state above the ratio what you are comparing: boys to girls

4 to 7

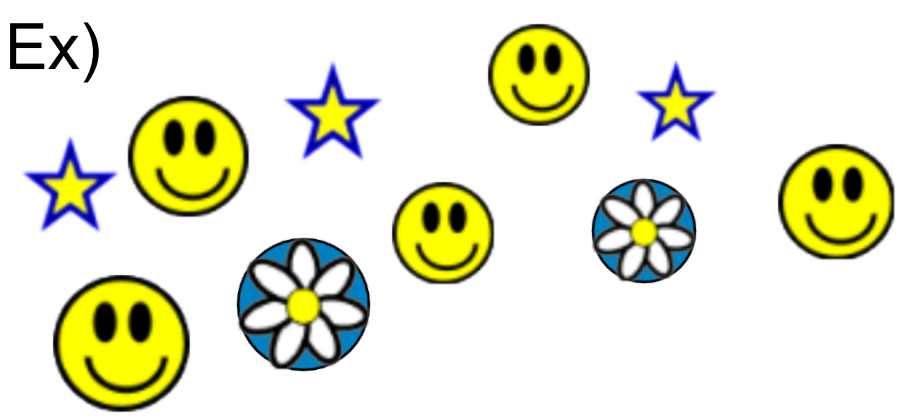
Also, order is very important with ratios. The ratio boys to girls is not the same as the ratio of girls to boys, because they are not in the same order.

You can have a two term or three term ratio.

A part to part ratio is comparing one part of a collection to another part, for example boys to girls. A part to part ratio can not be written as a fraction.

A part to whole ratio is comparing one part of the collection to the TOTAL collection, such as boys to all students. A part to whole ratio can be written as a fraction.

Ex)



ratio

Stars :all shapes

3 : 10

Fraction ✓

Part to whole

$\frac{3}{10} \xrightarrow{\times 10} \frac{30}{100}$

30 %

Percent

Percent is a special ratio, where the second term is always 100.

ex) 80% is often referred to as 80 out of 100. $80\% = \frac{80}{100}$

You can easily write a percent as a fraction, decimal or number.

Percent as a fraction --> Put Whole number over 100

--> reduce to lowest terms

Ex) $80\% \Rightarrow \frac{80}{100} \overset{\div 10}{\underset{\div 10}{=}} \frac{8}{10} \overset{\div 2}{\underset{\div 2}{=}} \frac{4}{5}$

Examples:

a) 27 %

$= \frac{27}{100}$

b) 36%

$= \frac{36}{100}$ Reduce $\overset{\div 2}{\underset{\div 2}{=}} \frac{18}{50} \overset{\div 2}{\underset{\div 2}{=}} \boxed{\frac{9}{25}}$

$\frac{36}{100} \overset{\div 4}{\underset{\div 4}{=}} \frac{9}{25}$

Percent to a Decimal

To change from a percent to a decimal, you divide by 100 (or move the dec
point 2 places to the left)

Recall all whole numbers have a decimal at the end

52 % = 0.52

$\frac{52}{100} = \frac{26}{50} = \frac{13}{25}$

87 % = 0.87

Fraction

$\frac{87}{100}$

0.47 % = 0.0047

Decimal

percent

$\frac{47}{10\,000}$

Decimal to Percent

To change from a decimal to a percent, you MULTIPLY by 100 (or move the decimal point 2 places to the right)



Examples)

$0.37 = 37\%$ Fraction $\frac{37}{100}$

$0.78 = 78\%$ $\frac{78}{100} = \frac{39}{50}$

$3.5 = 350\%$ $\frac{350}{100} = 3\frac{50}{100} = 3\frac{1}{2} = \frac{7}{2}$

$1.75 = 175\%$ $\frac{175}{100} \div 25 = \frac{7}{4} = 1\frac{3}{4}$

Write Fractions as a Percent

- Change a fraction to an equivalent fraction with denominator of 10, 100 or 1000 and convert to decimal. Then top # represent the %

ex 1) $\frac{2}{5} \overset{\times 20}{=} \frac{40}{100} = 40\%$

Ex 2) $\frac{7}{20} \overset{\times 5}{=} \frac{35}{100} = 35\%$

When denominator won't got to 10, 100 or 1000 then use calculator

- Top ÷ Bottom on am calculator gives you the decimal form. Then multiply the decimal by 100 and put a percent symbol.

ex 3) $\frac{5}{7}$ Top ÷ Bottom → Gives decimal

$5 \div 7$

This decimal $= 0.714285\ldots$

dec → % (x100)

$= 71.4\%$

Decimal Percents to Fractions

14.5 % is a percentage NOT a decimal because it has a % symbol

To change decimal percents to fractions you should change them to a decimal form first.

% → decimal } ÷ by 100
dec → fraction } place values

÷ 100

14.5% = 0.145 ==> $\frac{145}{1000}$ $\div 5$ $\div 5$ = $\frac{29}{200}$

Percent Decimal form

Now use place values

to write as a fraction

145 end in the thousandths place
so the denominator is 1000

$$\frac{145}{1000}$$ Now REDUCE

$$= \frac{29}{200}$$

÷100 place value

You try % → dec → fraction

Ex) 18.2 %

18.2% ← decimal

0.182

$\frac{182}{1000} =$

$= \boxed{\frac{91}{500}}$

ex) 72.3%

Decimal 0.723

Fraction $\frac{723}{1000}$

you try

Ex) Write percent as a fraction and a decimal.

Sketch number lines to show how the numbers are related.

% → ÷100 Dec → place value Fraction

a) 4%

0.04

$\frac{4}{100}$ ÷2 Reduce

$\frac{2}{50}$ ÷2

$\frac{1}{25}$

b) 57%

0.57

$\frac{57}{100}$

c) 91%

0.91

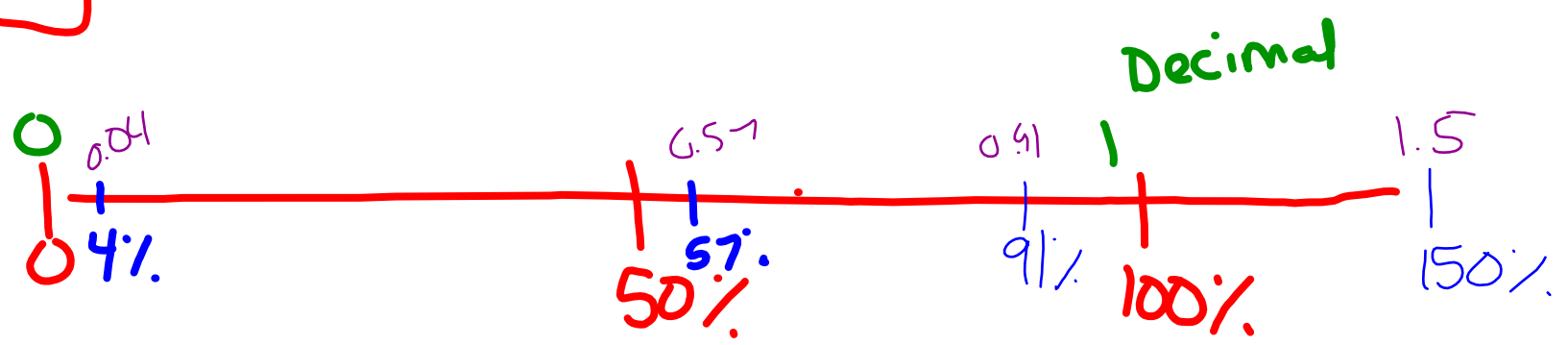
$\frac{91}{100}$

d) 150%

1.50

$\frac{150}{100} = \frac{15}{10} = 1\frac{5}{10} = 1\frac{1}{2}$

$\frac{3}{2}$

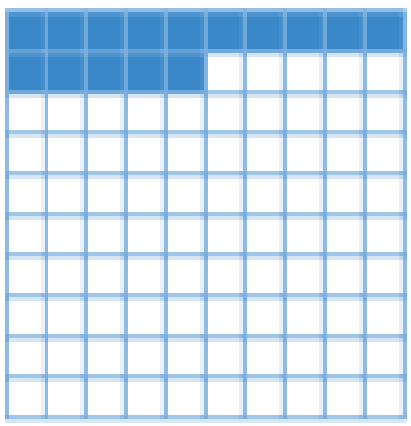


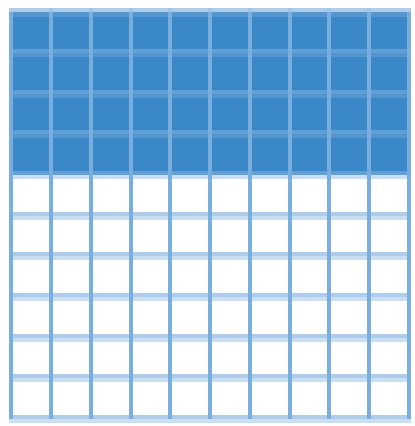
Homework - Complete chart
WS on next page # 1,2,3,4

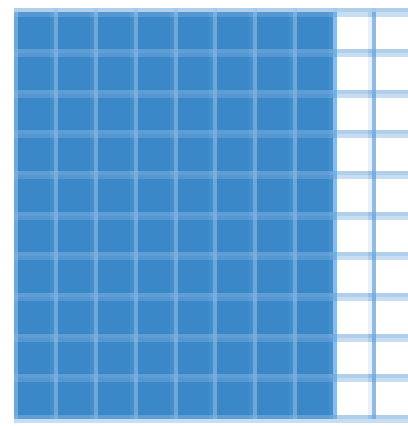
	Out of 100	Percent	Fraction	Decimal
a	25	25%	$\frac{25}{100}$ Reduce $\frac{1}{4}$	0.25
b	92			
c				0.64
d		9%		
e			42/50	
f	18			
g			$\frac{1}{8} = \frac{125}{1000}$ 1/8	
h				0.03
i			2/5	
j				0.15
k	73			
l		140%		
m		2.5%		
n				1.23

1. What percent of each hundred chart is shaded?

Write each percent as a fraction and as a decimal.

a) 

b) 

c) 

2. Write each percent as a fraction and a decimal.

Sketch number lines to show how the numbers are related.

a) 2% **b)** 9% **c)** 28% **d)** 95%

3. Write each fraction as a decimal and a percent.

a) $\frac{2}{10}$ b) $\frac{3}{50}$ c) $\frac{4}{25}$ d) $\frac{13}{20}$ e) $\frac{4}{5}$

4. Fred had 8 out of 10 on a test. Janet had 82% on the test. Who did better? How do you know?

