Non-integer numbers can be written as fraction or decimals.

Fractions: $\dfrac{2}{5}$ ← numerator
← denominator

Decimals: 0.625 ← thousandth
↑ ↑
tenth hundredth

Fraction	$\dfrac{7}{10}$ seven tenths	$\dfrac{1}{100}$	$\dfrac{19}{100}$	$\dfrac{1}{1000}$	$\dfrac{23}{1000}$
Decimal	0.7	0.01	0.19	0.001	0.023

seven in the tenth spot

end in the thousandth place

Example: Write each fraction as a decimal.

Strategy #1 – Change the fraction so that the denominator is 10, 100, 1000 etc.

$\dfrac{3^{\times 2}}{5_{\times 2}} = \dfrac{6}{10} = 0.6$

must do same to top & bottom

$\dfrac{6^{\times 4}}{25_{\times 4}} = \dfrac{24}{100} = 0.24$

Strategy #2 – Divide using long division.

$\dfrac{3}{8}$

```
  0.375
8│3.0000
 -2 4↓
    60│
    56↓
    40
    4 0
     0
```

↳ when you can't easily change the fraction

$\dfrac{3}{8} = \boxed{0.375}$

Example: Write each decimal as a fraction. Reduce to lowest terms. ← simplify

0.73

$\dfrac{73}{100}$

can't reduce
- no common factors

0.12

$\dfrac{12^{\div 4}}{100_{\div 4}} = \dfrac{3}{25}$

HW p.88 #1,2,3a,4,
Bonus 5 6,8,9,10

Decimals such as 0.1 and 0.25, are _____terminating_____ _____decimals_____.

Decimals such as 0.333 333… or 0.454 545…; 0.811 111… are _____repeating_____ _____decimals_____.

Some digits in each repeating decimal repeat forever. We draw a bar over the digits that repeat.

Example:

$0.\overline{3}$ $0.\overline{45}$ $0.8\overline{1}$

Use a calculator to divide the following:

5 ÷ 9   38 ÷ 99   13 ÷ 999

$= 0.5$ $0.\overline{38}$ $0.\overline{013}$

What pattern do you see?

# of repeating digits = the # of 9's
in the denominator

Example: Write the following repeating decimals as fractions.

$0.\overline{2}$ $= \dfrac{2}{9}$

$0.\overline{875}$ $= \dfrac{875}{999}$

$0.\overline{03}$ $= \dfrac{3}{99}$

Mixed fraction **Improper fraction**

3.2 Comparing and Ordering Fractions and Decimals

NAME:

Date:

Question: Three students are selling chocolate bars as a fund raiser for their school. The bars are packaged in cartons. Ardavan sold $2\frac{2}{3}$ cartons, Isha sold $\frac{5}{2}$ cartons and Daniel sold 2.25 cartons.

Who sold the most chocolate bars? How do you know?

Ardavan

$2\frac{2}{3}$
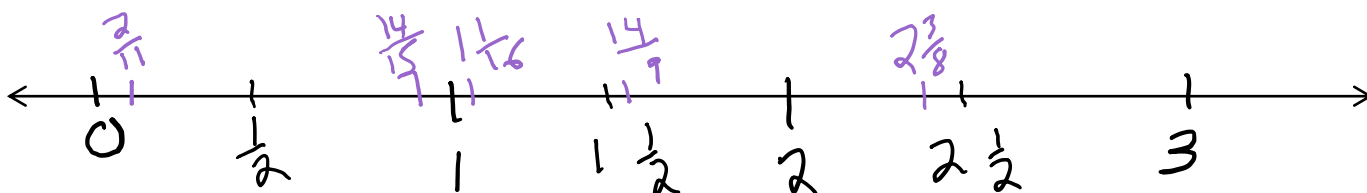
Isha

$\frac{5}{2} = 2\frac{1}{2}$

Daniel

$2.25 = 2\frac{25}{100} = 2\frac{1}{4}$

$1\frac{5}{9}$

Any fraction greater than 1 can be written as a mixed number.

Use a number line to order the following numbers: $\frac{2}{11}$, $2\frac{3}{8}$, $1\frac{1}{16}$, $\frac{14}{9}$, $\frac{14}{15}$

Example:

a) Write the following numbers in order from least to greatest: $\frac{7}{8}$, $\frac{9}{8}$, $\frac{1}{4}$, 0.75

$\frac{1}{4} \overset{\times 2}{\underset{\times 2}{=}} \frac{2}{8}$

$0.75 = \frac{75 \div 25}{100 \div 25} = \frac{3 \times 2}{4 \times 2} = \frac{6}{8}$

same denominator

$\frac{2}{8}, \frac{6}{8}, \frac{7}{8}, \frac{9}{8}$

$\boxed{\frac{1}{4}, 0.75, \frac{7}{8}, \frac{9}{8}}$

b) Write a number between $\frac{9}{8}$ and $1\frac{1}{4}$.

$1\frac{1}{8} \cdot \frac{1}{4} = \frac{5}{4}$

$\frac{9}{8}$ $\frac{5 \times 2}{4 \times 2}$

$\frac{9}{8}\overset{\times 2}{\underset{\times 2}{}}$ $\frac{10 \times 2}{8 \times 2}$

$\frac{18}{16}$ $\boxed{\frac{19}{16}}$ $\frac{20}{16}$

HW: p. 94

#1, 3ac, 4ac, 5a, 6, 7, 8a.c, 9a, 10, 11   2 days

3.3 Adding and Subtracting Decimals

NAME:

Date:

The Hunger Games: Mockingjay just set box office records for an opening 5 days in November. The earnings are shown in the table. ==Estimate== the total box office earnings.

Day	Earnings (Millions of $)
Friday	70.95
Saturday	52.6
Sunday	34.53
Monday	12.3
Tuesday	15.9

70.95 → 71
52.6 → 53
34.53 → 35
12.3 → 12
15.9 → 16

71
53
35
12
16
———
187

Tips on Rounding:
- Find the place that you want to round
- Look at the digit to the right
- If it is 0 – 4 round __down__
- If it is 5 – 9 round __up__

When adding or subtracting decimal we will always ___estimate___ the ___answer___ first.

Determine the exact box office earnings.

70.95
52.60
34.53
12.30
15.90
———
186.28

$186.28

How ==much more money== did the movie make on Friday than it did on Saturday?

70.95
- 52.60
———
18.35

$18.35

Homework: p.98 # 1-6, 9,10

Estimate the following:

1) 13.7 + 9.15

14 + 9
= 23

2) 14.63 + 122.1

15 + 122

122
+15
———
137

3) 48.3 - 12.59

48 - 13
= 35

4) 263.94 – 32.87

264 - 33

264
-33
———
231

3.4 Multiplying Decimals

NAME:

Date:

Calculate the following:

12 x 22   38 x 11

Estimate the following:

1.9 x 2.3   4.25 x 9.11   12.2195 x 8.5903

We can solve decimal multiplication by _____ and then _____

Ex: 8.7 x 3.4   2) 2.28 x 15.6

To determine where to place the decimal point in our answer we can do the following:

- Look at our _____

Count the number of _____ after the decimal place in the original number and then make sure that there are the same total number of digits

<u>Ex</u>.   52.1 ÷ 0.8

Use a calculator to find the following:

1) 52.1 ÷ 10   2) 52.1 ÷ 50   3) 52.1 ÷100

When we divide by a number greater than one the dividend gets _____.

Use a calculator to find the following:

1) 52.1 ÷ 0.1   2) 52.1 ÷ 0.05   3) 52.1 ÷ 0.01

When we divide by a number less than one the dividend gets _____.

3.6 Order of Operations

NAME:

Date:

- When solving equations with multiple operations we go _____ _____ _____ ___ _____

- Remember that we need to solve it in the correct order: _____

Ex: Solve $12.376 \div (4.75 + 1.2) + 2.45 \times 0.2 - 1.84$

B

E

D

M

A

S

Percentages are another way to write _____ and _____.

Ex: 12%   85%

En Francais:

Hundred = _____

So **percent** literally translates to:

Write the following as fractions and decimals:

a) 75%   b) 8%   c) 157%

Strategy for converting percentages:

- Write the number over _____   •

Write the following as percentages:

a) 0.18   b) 0.7   c) $\dfrac{7}{25}$ d) $\dfrac{21}{35}$

Strategy for converting to percentage

- Write as a fraction with a denominator of _____.

- If you are stuck _____ the fraction first.

3.8 Solving Percentage Problems

NAME:

Date:

Ex: A jacket costs $48 and is on sale for 30% off.

a. How much would you save?
b. What is the final cost of the jacket?

Estimate

Ex: A book costs $9 and there is an 8% sales tax. What is the final sale price?

Estimate