

Math 7
Decimal Addition & Subtraction Unit

Date: ~~Sept 29~~



Review first

1) Show work on how to find the sum of 2899 and 57

$$\begin{array}{r} 2899 \\ + 57 \\ \hline 2956 \end{array}$$

2) Show work on how to find the difference of 456 and 87

↓
subtract

$$\begin{array}{r} 3 \cancel{4} \cancel{5} \cancel{6} \\ - 87 \\ \hline 369 \end{array}$$

Decimals

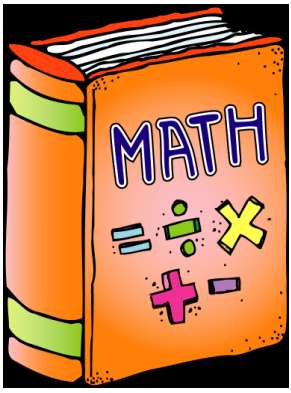
Decimal Place Value Chart													
Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones	Decimal point	Tenths	<u>Hundredths</u>	Thousandths	Ten-thousandths	Hundred thousandths	Millionths
			3	6	8	4	●	2	6				

Image 1: Decimal Place Value chart.

Key words for operations

The words that indicate operations math word problems are:

add	Subtract	Multiply	Divide
addition, sum, both, combined, altogether, more than, perimeter, increase, plus total deposit	subtract, remain, less than, decrease, take away, minus, fewer, how many more are needed, difference withdraw	times, double, of, product, twice, area, each, per, / triple a rate.	divided, half, average, split, quotient, equal groups, share equally, out of, quarter, distribute, finding out cost of each item.



Add or Subtract Decimals

Recall from grade 6



To add or subtract decimals, follow these steps:

- > Write the numbers one under the other, with the decimal points lined up.
- > Put in zeros so the numbers have the same length
- > Then add or subtract, using column addition, remembering to put the decimal point in the answer lined up.

Ex) $4.28 + 3.7$

$$\begin{array}{r} 4.28 \\ + 3.70 \\ \hline 7.98 \end{array}$$

Ex) $28.15 + 2.139$

$$\begin{array}{r} 28.150 \\ + 2.139 \\ \hline 30.289 \end{array}$$

Ex) $20.4 - 6.7$

OR

$$\begin{array}{r} 20.4 \\ - 6.7 \\ \hline 13.7 \end{array}$$

$$\begin{array}{r} 20.4 \\ - 6.7 \\ \hline 13.7 \end{array}$$

Add or Subtract

↳ the decimal (•) lines up

a) $28.7 + 0.25$

$$\begin{array}{r} 28.70 \\ + 0.25 \\ \hline 28.95 \end{array}$$

b) $92.3 - 13.65$

$$\begin{array}{r} 92.30 \\ - 13.65 \\ \hline 78.65 \end{array}$$

c) $30 + 4.2$

$$\begin{array}{r} 30.0 \\ + 4.2 \\ \hline 34.2 \end{array}$$

d) $24.6 - 8.06$

$$\begin{array}{r} 24.60 \\ - 8.06 \\ \hline 16.54 \end{array}$$

$$\begin{array}{r}
 \overset{1}{\cancel{2}} \overset{9}{\cancel{0}} \overset{9}{\cancel{0}} . 143 \\
 - \quad 72.61 \\
 \hline
 2
 \end{array}$$

$$\begin{array}{r}
 \overset{199}{\cancel{200}} . 143 \\
 - \quad 72.61 \\
 \hline
 127.52
 \end{array}$$

Rounding Rules

- Underline place value you are rounding to
- Look at the Digit to the right
 - 5 or greater then increase by 1
 - 4 or less then stays the same
- Keep everything before the underline the same

Review of
Gr. 6



Example) Round to the ones place

a) 21.46



21

b) 37.62



38

c) 29.87



30

Ex) Round 45.647 to the tenths place



45.6

Ex) Round 81.274 to the tenths place



81.3

Round to tenths

29.96



30.0

Ex) Round to the hundredths

• - -

a) 94.367
 $\underline{94.37}$

b) 2.732
 $\underline{2.73}$

c) 47.201
 $\underline{47.20}$

d) 10.796
 $\underline{10.80}$

1079

Round to the tenths

e) 14.27
 $\underline{14.3}$

f) 12.84
 $\underline{12.8}$ Same

Estimating

We call this front end estimation



- Round to the ones place and drop the decimal part.

Example)

Estimate the sum of the following

$$14.25 + 11.71 + 15.07 \approx 40$$

$$\begin{array}{r} 14 \\ + 11 \\ + 15 \\ \hline 40 \end{array}$$

Rounding

$$\begin{array}{r} 14 \\ + 12 \\ + 15 \\ \hline 41 \end{array}$$

Estimate $11.36 - 7.84$

by using the following:

a) rounding *ones place*

b) front-end estimation

c) Find Actual

$$\begin{array}{r} a) \quad 11 \\ - 8 \\ \hline 3 \end{array}$$

$$\begin{array}{r} b) \quad 11 \\ - 7 \\ \hline 4 \end{array}$$

$$\begin{array}{r} c) \quad 11.36 \\ - 7.84 \\ \hline 3.52 \end{array}$$

Class/ Homework

Gr 7 Textbook
Homework
pg. 98 # 1

Only estimate when asked to estimate. (If not
then just add or subtract normally showing work)
line up

1. Use front-end estimation to estimate each sum or difference.

a) $2.876 - 0.975$

b) $71.382 + 6.357$

c) $125.12 + 37.84$

d) $9.7 - 1.36$

a) $\approx \underset{2}{3} - 1$

b) $\approx \underset{77}{71} + 6$

c) $\approx \underset{163}{125} + 38$

$\approx \underset{160}{125} + 35$

d) $\approx \underset{8.3}{9.7} - 1.4$

$\approx \underset{9}{10} - 1$

$\leftarrow$ better
 $\approx \underset{8}{9.5} - 1.5$

2. The tallest building in the world is the Taipei 101 in Taiwan. Its height is 0.509 km. The tallest building in North America is the Sears Tower in Chicago, USA. Its height is 0.442 km. What is the difference in the heights of the buildings?

$$\begin{array}{r} 0. \overset{4}{\cancel{5}} \overset{1}{\cancel{0}} 9 \\ - 0. 442 \\ \hline 0.067 \text{ km} \end{array}$$

3. Four classes of students from Mackenzie School are planning

a field trip. The total cost of the trip is \$1067.50.

To date, the classes have raised: \$192.18, \$212.05, \$231.24, \$183.77

a) How much money have the classes raised so far?

b) How much more money do the classes need to raise in total?

Show your work.

$$\approx 190 + 210 + 230 + 180 = 810$$

$$\begin{array}{r} \text{a)} \quad \overset{2}{1}9\overset{1}{2}.\overset{2}{1}8 \\ 212.05 \\ 231.24 \\ 183.77 \\ \hline \$819.24 \end{array}$$

$$\begin{array}{r} \text{b)} \quad \overset{5}{1}0\overset{4}{6}7.\overset{1}{5}0 \\ - 819.24 \\ \hline \$248.26 \end{array}$$

4. **Assessment Focus** A baker wants to make 3 different kinds of chocolate chip cookies. The recipes call for 2.75 kg, 4.4 kg, and 5.55 kg of chocolate chips. The baker has 10.5 kg of chocolate chips.

a) How many kilograms of chocolate chips does the baker need?

Estimate to check your answer is reasonable.

b) Does the baker have enough chocolate chips to make the cookies?

How do you know?

c) The baker wants to follow the recipes exactly.

If your answer to part b is no, how many more kilograms of chocolate chips are needed? If your answer to part b is yes, how many kilograms of chocolate chips will the baker have left over?

$$\begin{array}{r} \text{a)} \quad \overset{1}{2}.\overset{1}{7}5 \\ 4.40 \\ + 5.55 \\ \hline 12.70 \end{array}$$

$$\approx 3 + 4 + 5.5 = 12.5$$

b) No, he does not have enough

$$\begin{array}{r} \text{c)} \quad 12.70 \\ - 10.50 \\ \hline 2.20 \end{array}$$

He needs another 2.2 kg

5. Estimate, then calculate, the sum below.

Explain how you estimated.

$$46.71 + 3.9 + 0.875$$

$$\approx 46 + 4 + 1$$

51

I knew $46 + 4 = 50$
which is an easy
number to work with

$$\begin{array}{r} 46.710 \\ 3.900 \\ + 0.875 \\ \hline 51.485 \end{array}$$

6. The Robb family and the Chan family have similar homes.

The Robb family sets its thermostat to 20°C during the winter months.

Its monthly heating bills were: \$171.23, \$134.35, and \$123.21

The Chan family used a programmable thermostat to lower the temperature at night, and during the day when the family was out.

The Chan family's monthly heating bills were: \$134.25, \$103.27, and \$98.66

a) How much money did each family pay to heat its home during the winter months?

b) How much more money did the Robb family pay?

Estimate to check your answer is reasonable.

c) What other things could a family do to reduce its heating costs?

Robb Family

$$\begin{array}{r} 171.23 \\ 134.35 \\ 123.21 \\ \hline 428.79 \end{array}$$

Chan Family

$$\begin{array}{r} 134.25 \\ 103.27 \\ 98.66 \\ \hline 336.18 \end{array}$$

b)

$$\begin{array}{r} 428.79 \\ - 336.18 \\ \hline 92.61 \end{array}$$

$$\approx 430 - 335$$

95