

MULTIPLICATION CHART

factors

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60
3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	63	66	69	72	75	78	81	84	87	90
4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120
5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150
6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126	132	138	144	150	156	162	168	174	180
7	14	21	28	35	42	49	56	63	70	77	84	91	98	105	112	119	126	133	140	147	154	161	168	175	182	189	196	203	210
8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144	152	160	168	176	184	192	200	208	216	224	232	240
9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144	153	162	171	180	189	198	207	216	225	234	243	252	261	270
10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300
11	22	33	44	55	66	77	88	99	110	121	132	143	154	165	176	187	198	209	220	231	242	253	264	275	286	297	308	319	330
12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	252	264	276	288	300	312	324	336	348	360
13	26	39	52	65	78	91	104	117	130	143	156	169	182	195	208	221	234	247	260	273	286	299	312	325	338	351	364	377	390
14	28	42	56	70	84	98	112	126	140	154	168	182	196	210	224	238	252	266	280	294	308	322	336	350	364	378	392	406	420
15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	360	375	390	405	420	435	450
16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288	304	320	336	352	368	384	400	416	432	448	464	480
17	34	51	68	85	102	119	136	153	170	187	204	221	238	255	272	289	306	323	340	357	374	391	408	425	442	459	476	493	510
18	36	54	72	90	108	126	144	162	180	198	216	234	252	270	288	306	324	342	360	378	396	414	432	450	468	486	504	522	540
19	38	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323	342	361	380	399	418	437	456	475	494	513	532	551	570
20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560	580	600
21	42	63	84	105	126	147	168	189	210	231	252	273	294	315	336	357	378	399	420	441	462	483	504	525	546	567	588	609	630
22	44	66	88	110	132	154	176	198	220	242	264	286	308	330	352	374	396	418	440	462	484	506	528	550	572	594	616	638	660
23	46	69	92	115	138	161	184	207	230	253	276	299	322	345	368	391	414	437	460	483	506	529	552	575	598	621	644	667	690
24	48	72	96	120	144	168	192	216	240	264	288	312	336	360	384	408	432	456	480	504	528	552	576	600	624	648	672	696	720
25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600	625	650	675	700	725	750
26	52	78	104	130	156	182	208	234	260	286	312	338	364	390	416	442	468	494	520	546	572	598	624	650	676	702	728	754	780
27	54	81	108	135	162	189	216	243	270	297	324	351	378	405	432	459	486	513	540	567	594	621	648	675	702	729	756	783	810
28	56	84	112	140	168	196	224	252	280	308	336	364	392	420	448	476	504	532	560	588	616	644	672	700	728	756	784	812	840
29	58	87	116	145	174	203	232	261	290	319	348	377	406	435	464	493	522	551	580	609	638	667	696	725	754	783	812	841	870
30	60	90	120	150	180	210	240	270	300	330	360	390	420	450	480	510	540	570	600	630	660	690	720	750	780	810	840	870	900

factors

multiples



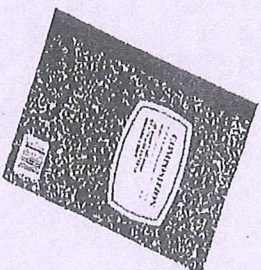
Integer	Proper Factors	My Score	Sum of the factors
1	None	identity	0
2	1	prime	1
3	1	prime	1
4	1, 2	square	3
5	1	prime	1
6	1, 2, 3	composite	6-perfect
7	1	prime	1
8	1, 2, 4	composite	7
9	1, 3	square	4
10	1, 2, 5	composite	8
11	1	prime	1
12	1, 2, 3, 4, 6	composite	16-abundant
13	1	prime	1
14	1, 2, 7	composite	10
15	1, 3, 5	composite	9
16	1, 2, 4, 8	composite	15
17	1	prime	1
18	1, 2, 3, 6, 9	composite	21-abundant
19	1	prime	1
20	1, 2, 4, 5, 10	composite	22
21	1, 3, 7	composite	11
22	1, 2, 11	composite	14
23	1	prime	1
24	1, 2, 3, 4, 6, 8, 12	composite	36-abundant
25	1, 5	square	6
26	1, 2, 13	composite	16
27	1, 3, 9	composite	13
28	1, 2, 4, 7, 14	composite	28-perfect
29	1	prime	1
30	1, 2, 3, 5, 6, 10, 15	composite	42

Sum of the factors less than the integer are deficient numbers

Math Interactive Student Notebook

Your notebook will.....

- * be a way to organize your notes
- * make class notes easier to understand
- * allow you to be more successful in class
- * become your own personalized text book



Left Side output

This side is where you will process and practice new skills

Right Side input

This side will have new ideas and skills. You should look at right side pages when you need help remembering how to do something or to study

IN ORDER TO BE SUCCESSFUL, YOUR NOTEBOOK MUST BE BROUGHT TO CLASS EVERYDAY AND SHOULD BE BROUGHT HOME TO STUDY AND HELP WITH HOMEWORK.

What makes the ISN different than a regular notebook?

Many traditional notebooks and binders have a tendency to get disorganized easily—papers fall out and get lost, notes get misplaced, and sometimes they are used for more than one class. This notebook will be a very valuable tool for you this year. Notes and new ideas will be presented in a clear manner that you will be able to use as your own “how to guide”. You will need the skills you learn this year throughout middle school and high school.

Handwritten notes on a lined paper strip at the bottom of the page.

9/12

Words Problem

adds combines
more than total both
increase tally

In all + Sum
and amount
all together positive

Inverse of subtraction

In all multiples
Factors of each
force of

$\times \cdot * ()$

product squared
times cubed
double triple multiply
Inverse of division

Operations clues

9/13

how many more?

lose how much change?

difference

fewer

—

subtract

negative

less than

more than

have left

lost

Inverse of addition

equally

shared in each

reduce

divide

÷ / $\frac{\square}{\square}$

$\frac{\text{dividend}}{\text{divisor}}$

division

go into

per half

out of

unit price

go in event of

Inverse of multiplication

35010 310101390

Is it divisible by?

Dividing by 2

- All even numbers are divisible by 2 (all numbers ending in 0, 2, 4, 6, 8)

Dividing by 3

- Add up all the digits in the number
- Find out what the sum is and if the sum is divisible by three, so is the number
- For example: 12123 ($1+2+1+2+3=9$) 9 is divisible by 3, so 12123 is too!

Dividing by 4

- Are the last two digits in your number divisible by 4? If so, the number is too!
- For example: 358912 ends in 12 which is divisible by 4, so is 358912!

Dividing by 5

- Numbers ending in a 5 or a 0 are ALWAYS divisible by 5

Dividing by 6

- If the number is divisible by 2 and 3 it is divisible by 6 also

Dividing by 7

- Take the last digit in a number
- Double and subtract the last digit in you number from the rest of the digits - repeat process for larger numbers
- Example: 357 - double the 7 to get 14. Subtract 14 from 35 to get 21 which is divisible so 357 is too!

Dividing by 8

- If the last 3 digits are divisible by 8, so is the entire number

Dividing by 9

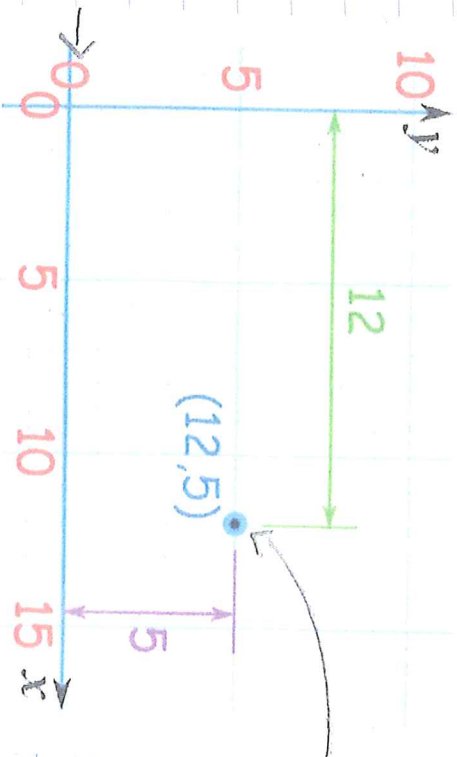
- Add up all the digits of the number and if the sum is divisible by 9, the number is too

Dividing by 10

- If the number ends in 0, it is divisible by 10

9/23

Coordinate Plane



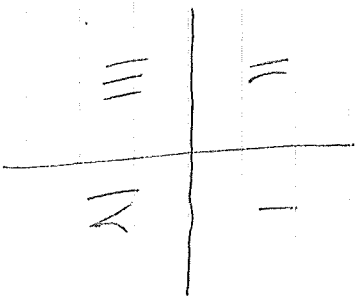
The point $(12, 5)$ is 12 units along, and 5 units up.

Coordinate grid - formed when two perpendicular number lines intersect at their zero points

X axis - horizontal number line

Y-axis - vertical number line

ordered pair - a pair of numbers (x, y) used to locate a point on the coordinate plane



9/23

Examples

Proccors
↓

$$\begin{array}{r} 10 \\ 16 \overline{) 40} \\ \underline{16} \\ 24 \\ \underline{16} \\ 8 \end{array}$$

$$\begin{array}{r} 10 \\ 21 \overline{) 210} \\ \underline{21} \\ 0 \end{array}$$

Cross multiply / divide

$$\begin{array}{r} 10 \\ 40 \overline{) 400} \\ \underline{40} \\ 0 \end{array}$$

Miles
gallons

$$\begin{array}{r} 480 \\ 12 \overline{) 35} \\ \underline{12} \\ 230 \end{array}$$

$$\begin{array}{r} 35 \\ 8 \overline{) 280} \\ \underline{24} \\ 40 \end{array}$$

9/23

Notes

scaling up - multiply

scaling down - divide

sometimes you have to multiply
but for it you can divide

16/11

Team

Factor

Multiple

Everyday meanings

Factor - something that actively
contributes to a decision or
result

Multiple - consisting of more than
one or shared by many

Examples

2 and 3 are factors of 6

Multiples of 2 are 0, 2, 4, 6, 8, ...

1011

Fractions

Decimals

one millions
hundred thousands
ten thousands
one thousands
hundreds
tens
ones
•
tenths
hundredths
thousandths
ten thousandths
hundred thousandths
millionths

place value - fraction of 0

Percent

10/11

Fraction to decimal

Method 1 - Percent to a percent 100

Simplify if necessary

Multiply / divide to get base 10 denominator

$$\frac{9}{13} = \frac{3 \times 3}{4 \times 25} = \frac{75}{100} = .75$$

Fraction 2

divide the numerator by the denominator $\frac{11}{9} = 1\frac{2}{9}$

2.25 decimal point and annex 0's if needed

2.25 decimal point and annex 0's if needed
100
1000
200
20
2

preferred method for improper fractions

$$12 \overline{) 9.00} \quad .75$$
$$\underline{84} $$

1011 percents

denominator

10, 100, 1000, 10000

↓
percent
out of 100

$$\begin{array}{r} 75 \\ 100 \overline{) 75.00} \\ \underline{70} \\ 50 \\ \underline{50} \\ 0 \end{array}$$

$$.75 * 100 \text{ is } 75\%$$

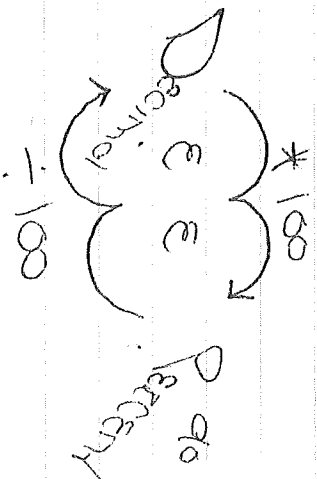
$$75\% \div 100 \text{ is } .75$$

decimals to Percents

multiply $\times 100$
move the decimal 2 places
to the right and add %

Percents to decimals

remove 0s and divide by 100
remove the most the decimal 2 places
to the left



$0.36 = 36\% = 36\%$
move two places to right and
add %

$36\% = 36\% = 36\%$
remove the 0s move decimal
two places to the left

10/3

To write as a decimal, divide by 100 after removing the %
Some os moving the decimal two places to the left after removing the %

To write a decimal as a percent multiply by 100 and add %
Some os moving the decimal two places to the right and adding % sign

$$8\% \text{ is } \frac{8}{100} \quad 100 \overline{) 8.00} \text{ is } .08$$

place value ..

10/7

whole

<u>10000</u>	<u>1000</u>	<u>100</u>	<u>10</u>	<u>1</u>	<u>0.1</u>	<u>0.01</u>	<u>0.001</u>	<u>0.0001</u>	<u>0.00001</u>

percent is out of 100

example $\frac{500}{100}$ 15 100 | $\frac{500}{100}$ 15 5.00 is 500%

example $\frac{3}{4}$ 4 | $\frac{3.00}{28}$ 28 | $\frac{28}{28}$ 28 is 75%

example .2% = .002 = $\frac{2}{1000}$
 annex zero

conversion table

Equivalent Fractions

Equivalent Fractions have the same value, even though they may look different.

These fractions are really the same:

$$\dots \frac{1}{2} = \frac{2}{4} = \frac{4}{8} \dots$$

Why are they the same? Because when you multiply or divide both the top and bottom by the same number, the fraction keeps its value.

The rule to remember is:

*"Change the bottom using multiply or divide.
And the same to the top must be applied"*

So, here is why those fractions are really the same:

$$\frac{1}{2} \xrightarrow{\times 2} = \frac{2}{4} \xrightarrow{\times 2} = \frac{4}{8}$$

And visually it looks like this:



A decimal is an equivalent fraction with a base 10 denominator

Dividing

Here are some more equivalent fractions, this time by dividing:

$$\begin{array}{ccc} \div 3 & & \div 6 \\ \frac{18}{36} = & \frac{6}{12} = & \frac{1}{2} \end{array}$$

Choose the number you divide by carefully, so that the results (both top and bottom) stay whole numbers.

If we keep dividing until we can't go any further, then we have simplified the fraction (made it as simple as possible).

Summary:

- You can make equivalent fractions by multiplying or dividing **both top and bottom** by the same amount.
- You only multiply or divide, **never add or subtract**, to get an equivalent fraction.
- Only divide when the top and bottom would still be whole numbers.

compare and order fractions, Decimals

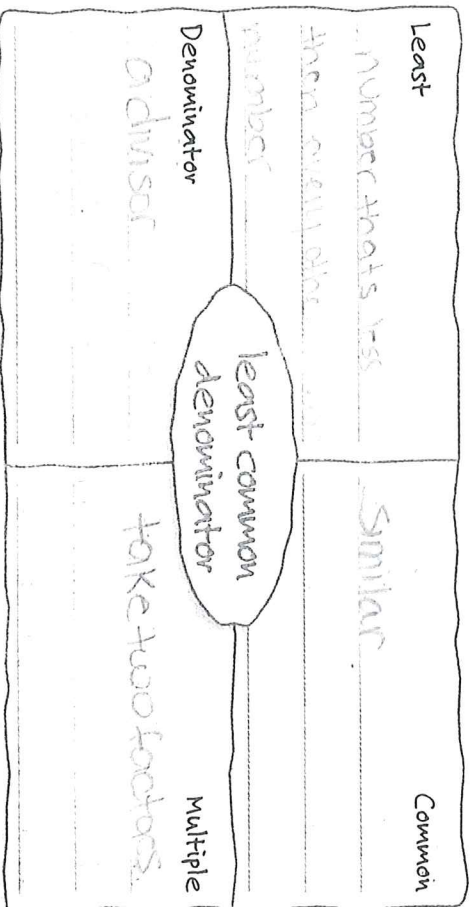
Compare and Order Fractions, Decimals

Vocabulary Start-Up



The **least common denominator**, or LCD, is the least common multiple of the denominators of two or more fractions.

Complete the graphic organizer. Write the meaning of each word in the appropriate box. Provide examples.



Real-World Link

- Earnest is baking, but he wants to use only one measuring cup. He needs $\frac{1}{2}$ cup of sugar and $\frac{3}{4}$ cup of flour. What is the least common multiple of the denominators? **[4]**
- What size measuring cup should he use: $\frac{1}{2}$ cup, $\frac{1}{3}$ cup, or $\frac{1}{4}$ cup? Explain. *he should use 1/4*

measuring cup

Common Fractions, Decimals Percents

10/8
10/14

$$\frac{1}{2} = .5 = 50\%$$

$$\frac{1}{3} = .333 = 33\% \quad \frac{2}{3} = .67 = 67\%$$

$$\frac{1}{4} = .25 = 25\% \quad \frac{3}{4} = .75 = 75\%$$

$$\frac{1}{5} = .20 = 20\% \quad \frac{2}{5} = .40 = 40\% \quad \frac{3}{5} = .60 = 60\% \quad \frac{4}{5} = .80 = 80\%$$

$$\frac{1}{6} = .166 = 16.7\% \quad \frac{2}{6} = .33 = 33\% \quad \frac{3}{6} = .50 = 50\% \quad \frac{4}{6} = .66 = 66\%$$

$$\frac{5}{6} = .83 = 83\%$$

$$\frac{1}{8} = .125 = 12.5\% \quad \frac{2}{8} = .25 = 25\% \quad \frac{3}{8} = .375 = 37.5\%$$

$$\frac{4}{8} = .50 = 50\% \quad \frac{5}{8} = .625 = 62.5\% \quad \frac{6}{8} = .75 = 75\%$$

$$\frac{7}{8} = .875 = 87.5\%$$

$$\frac{1}{10} = .10 = 10\% \quad \frac{2}{10} = .20 = 20\% \quad \frac{3}{10} = .3 = 30\% \quad \frac{4}{10} = .4 = 40\%$$

$$\frac{5}{10} = .5 = 50\% \quad \frac{6}{10} = .6 = 60\% \quad \frac{7}{10} = .7 = 70\% \quad \frac{8}{10} = .8 = 80\%$$

$$\frac{9}{10} = .9 = 90\%$$

FRACTIONS, DECIMALS & PERCENTS

1.00												1 whole												100%											
0.5				$\frac{1}{2}$				50%				0.5				$\frac{1}{2}$				50%															
0.33			$\frac{1}{3}$			33.3%			0.33			$\frac{1}{3}$			33.3%			0.33			$\frac{1}{3}$			33.3%											
0.25				$\frac{1}{4}$				25%				0.25				$\frac{1}{4}$				25%				0.25				$\frac{1}{4}$				25%			
0.20			$\frac{1}{5}$			20%			0.20			$\frac{1}{5}$			20%			0.20			$\frac{1}{5}$			20%			0.20			$\frac{1}{5}$			20%		
0.16			$\frac{1}{6}$			16.6%			0.16			$\frac{1}{6}$			16.6%			0.16			$\frac{1}{6}$			16.6%			0.16			$\frac{1}{6}$			16.6%		
$\frac{1}{8}$		0.125		12.5%		$\frac{1}{8}$		0.125		12.5%		$\frac{1}{8}$		0.125		12.5%		$\frac{1}{8}$		0.125		12.5%		$\frac{1}{8}$		0.125		12.5%		$\frac{1}{8}$		12.5%			
$\frac{1}{10}$		0.1		10%		$\frac{1}{10}$		0.1		10%		$\frac{1}{10}$		0.1		10%		$\frac{1}{10}$		0.1		10%		$\frac{1}{10}$		0.1		10%		$\frac{1}{10}$		10%			
$\frac{1}{12}$		0.083		8.3%		$\frac{1}{12}$		0.083		8.3%		$\frac{1}{12}$		0.083		8.3%		$\frac{1}{12}$		0.083		8.3%		$\frac{1}{12}$		0.083		8.3%		$\frac{1}{12}$		8.3%			

Finding percent of a number 10/17

$$\frac{q\%}{100} = \frac{15}{100} \text{ or } \frac{\text{Part}}{\text{Whole}}$$

Cross multiply the divide

Example what is 20% of 575

$$\frac{20}{100} = \frac{115}{575}$$

$$\begin{array}{r} 575 \\ * 20 \\ \hline 11500 \end{array}$$

$$\begin{array}{r} 115. \\ 100 \overline{) 11500} \\ \underline{1000} \\ 1500 \\ \underline{1000} \\ 5000 \\ \underline{5000} \\ 0 \end{array}$$

115 is 20% of 575

Example - In a recent state special Olympics meet, Franklin County sent a team of 70 athletes, Twenty percent of the team competed in soccer. how many athletes competed in soccer?

20% of team - team is 70

$$\frac{20}{100} = \frac{70}{?}$$

$$\frac{20}{100} = \frac{70}{1400}$$

14 athletes competed in soccer

$$\begin{array}{r} 14. \\ 100 \overline{) 1400} \\ \underline{1000} \\ 4000 \\ \underline{4000} \\ 0 \end{array}$$

.20 is 20%

$$\begin{array}{r} 70 \\ * .20 \\ \hline 1400 \end{array}$$

8 1/2 is a percent?

820%

$$\frac{41}{5} = \frac{82}{10} = \frac{820}{100}$$

$$\frac{820}{514100}$$

$$\frac{41}{5} = \frac{820}{100}$$

$$\frac{401}{101}$$

0.399 is a percent

3.99%

22.5% is a fraction in simplest form

$$\frac{22.5}{100} = \frac{225}{1000} = \frac{45}{200} \div \frac{5}{5} = \frac{9}{40}$$

Example - 9 out of 12

$$\frac{9}{12} = \frac{3}{4}$$

75%

Vocabulary

Proportion - is an equation that shows that two ratios are equivalent

Percent proportion - ratios that compares a part to the whole

Part
Whole

10 is 25% of what number

$$\frac{25}{100} = \frac{10}{40}$$

$$\frac{25}{100} = \frac{10}{40}$$

10 is 25% of 40

10/28 working with decimals

to add decimals -

align the decimal points vertically
add whole numbers to whole numbers,
tens to tens, hundreds to
hundreds, ...

to subtract decimals

there will be
* zeroes you may
need to add
order positions

align the decimal points vertically
subtract the whole numbers
from whole numbers, tens
from tens, hundreds from
hundreds, ...

Sometimes you must annex zeros
and rename / borrow to get
place value to take from

Do Not switch order

$$\begin{array}{r} 92.8 - 14.92 \\ \hline \end{array}$$

below

$$\begin{array}{r} 92.80 \\ - 14.92 \\ \hline 77.88 \end{array}$$

annex 0

$$\begin{array}{r} 77.88 \\ + 14.92 \\ \hline 92.80 \end{array}$$

working with decimals 10pg

To estimate products using rounding ~

First underline the digit to be rounded then look at the digit to the right of the place value being rounded

- If the digit is less than 5 the underlined digit stays the same

- If the digit is 5 or greater the underlined digit increases by 1 (10, 100)

7.3 rounds to 7 7.6 rounds to 8 10.9

99.96 rounds to 100 $3 \overline{) 108.62}$
 $3 \overline{) 336.752}$

Multiplying decimals

The sum of the number of decimal places in the factors is the number of decimal places in the product
you may need to add zeros

No need to align decimals

$$\begin{array}{r} 3.4 \text{ @} \\ \times 5.6 \text{ @} \\ \hline 204 \\ 160 \\ \hline 18.04 \text{ @} \end{array}$$

$$\begin{array}{r} 18.5 \text{ @} \\ \times 2.7 \\ \hline 129.5 \text{ @} \end{array}$$

$$\begin{array}{r} 0.834 \text{ @} \\ \times 0.05 \\ \hline 0.08340 \end{array}$$

↑ aligning

11/10
multiplying by Powers of 10
less than left ~ greater than right

move the decimal point the same
number of places as the number
of zeros in the power of 10

move the decimal to the left
when multiplying by a power of ten
less than 1

move the decimal to the right
when multiplying by a power
of 10 greater than 1

11/11

dividing decimals

divisor $\overline{)$ dividend
quotient

$\frac{D}{D} = \frac{\text{remainder}}{\text{divisor}} \quad d \overline{)n}$

when dividing a decimal by a whole number, move the decimal to the roof and divide

$318 \div 16 =$ use 318 divided by 16

$$\begin{array}{r} 19.875 \\ 16 \overline{) 318.000} \\ \underline{161} \\ 158 \\ \underline{144} \\ 140 \\ \underline{128} \\ 120 \\ \underline{112} \\ 80 \\ \underline{80} \\ 0 \end{array}$$

$$\begin{array}{r} 19 \text{ r } 14 \\ 19 \frac{14}{16} \\ 19 \frac{7}{8} \end{array} \quad \frac{7}{8} = 0.875$$

140 ← remainder
140 ← numerator

$$\frac{140}{16} = 8.75$$

11/19 Divide by decimals

When dividing by decimals, convert the divisor into a whole number and the dividend by moving the decimal the same place value.

Fractions

11/18

- ✓ when adding and subtracting must have a common denominator
- ✓ whole numbers as a fraction over 1

✓ reciprocal ~ flipping the fraction and product of two fraction factors is 1

i.e. $\frac{2}{3}$ the reciprocal is $\frac{3}{2}$

$$\frac{2}{3} \times \frac{3}{2} = \frac{6}{6} = 1$$

Rounding 0, 1/2, 1

If numerator is almost as large as denominator - round up

If numerator is much smaller than the denominator - round down

11/9

Commutative property -

can be in any order -
addition / multiplication

$a + b$	$a \cdot b$
$b + a$	$b \cdot a$

associative property

can change grouping

$$(a + b) + c = a + (b + c)$$

$$(ab)c = a(bc)$$

remainders

do remain on improper fraction
as a mixed number divide
the numerator by the
denominator. write the
remainder as a fraction
with the divisor as the denominator

Ex $\frac{3}{2}$ $1\frac{1}{2}$

 ↓ ↓
 denominator ← remainder
 Numerator

✓ If the product of a fraction multiplied by a fraction will be a smaller fraction

Simplifying a fraction - gcd of numerator/denominator until 1 common but simplified further

$$\text{ie } \frac{8:4}{12:4} = \frac{2}{3}$$

Improper fraction - numerator is greater than the denominator divides

Multiplying a mixed number by a fraction

✓ write the mixed number as an improper fraction

Remember - when mixed numbers are written as improper fractions the denominator does not change

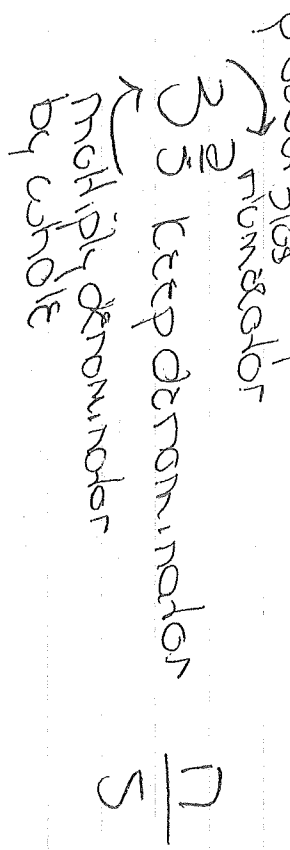
✓ multiply by fractions

$$2\frac{1}{4} \times \frac{1}{4} = \frac{9}{4} \times \frac{1}{4} = \frac{9}{16}$$

$$\frac{1}{3} \times 6\frac{2}{7} = \frac{1}{3} \times \frac{46}{7} = \frac{46}{21} = 2\frac{1}{3}$$
$$\frac{1}{3} \times \frac{46}{7} = 2\frac{1}{3}$$

11/21

convert a mixed number
to an improper fraction



distance = rate * time

$$d = rt$$

11/25

Customary Measurements Conversions

Type of measure larger unit → smaller unit

length 1 foot (ft) 12 inches
 1 yard 3 feet
 1 mile 5280 ft

weight 1 pound (lb) 16 ounces (oz)
 1 ton 2000 lbs

capacity 1 cup 8 fluid ounces
 1 pint 2 cups
 1 quart 2 pints
 1 gallon 4 quarts

$\frac{3 \cancel{ft}}{1 \cancel{yd}}$ is a unit ratio

dimensional analysis including units of measure and conversions

11/20

$$3\frac{1}{5} * 3\frac{1}{2}$$

✓ mixed to improper fraction

$$\frac{16}{5} \frac{19}{6} = \frac{304}{30}$$

✓ Improper to mixed

$$\begin{array}{r} \text{Digit} - 30 \overline{) 304} \\ \underline{30} \\ 4 \end{array}$$

Denominator 30
4 remainder
numerator

You do not do more division on this point. simplify the fraction by dividing by GCF

$$\frac{10 \overset{4:2}{\cancel{20}} \overset{2:2}{\cancel{2}}}{10 \overset{4:2}{\cancel{20}} \overset{2:2}{\cancel{2}}} = 10\frac{4}{15}$$

Dividing Fractions

1/21

Keep Change Flip

$\frac{\#}{\#}$

\div to $*$

$\frac{a}{b}$ to $\frac{b}{a}$

cannot change order

✓ ^{write} keep the first fraction