Millions Period			Thousands Period			Ones Period		
Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
		4	2	0	1	5	7	8

4 million 201 thousand 578

- *Standard form:* 4,201,578
- To find the value of a digit, multiply the digit by its place value.

  4 stands for $4 \times 1{,}000{,}000$, or 4,000,000
- *Expanded form:*
  $4{,}201{,}578 = 4{,}000{,}000 + 200{,}000 + 1{,}000 + 500 + 70 + 8$

Write each number in standard form.

1) six thousand one hundred four	2) fifteen million twenty-one thousand	3) sixty thousand one hundred twelve
4) 2 billion, 9 million, 6 thousand, 1	5) seventeen thousandths	6) twenty-nine hundredths
7) eight thousand two hundred ninety	8) one billion thirty thousand fifty	9) eighty-two thousand sixty

Use > or < to complete each statement.

523 ☐ 567	1,292 ☐ 1,192	47 ☐ 45
9,120 ☐ 912	53,010 ☐ 53,100	4,293 ☐ 4,239
783 ☐ 738	4,121 ☐ 4,212	35,423 ☐ 34,587
241,796 ☐ 242,976	182 ☐ 1,820	8,751 ☐ 8,715

Write in order from least to greatest.

1) 782, 785, 783, 790	2) 1,240; 1,420; 1,346; 1,364	3) 6,214; 6,124; 6,421; 6,241
4) 92,385; 92,835; 93,582; 93,258	5) 45,923; 54,923; 45,932; 54,932	6) 1,111; 1,011; 1,101; 1,110

Write the value of the digit 6 in each number.

1) 46,051	2) 62,071,357	3) 42,916
4) 1,063,251	5) 816,548	6) 70,642,050

Ones	Tenths	Hundredths	Thousandths
2	3	6	9

2 and 369 thousandths

- *Standard form:* 2.369
- To find the value of a digit, multiply the digit by its place value.
  9 stands for 9×0.001 or 0.009
- *Expanded form:*
  $2.369 = 2 + 0.3 + 0.06 + 0.009$

Write each decimal in expanded form.

1) 3.6	2) 4.72	3) 1.283
4) 21.5	5) 7.03	6) 15.308
7) 32.27	8) 6.475	9) 0.014

Write each decimal in words.

1) 0.2	2) 0.15	3) 0.29
4) 0.11	5) 0.60	6) 0.9

Write each decimal in standard form.

1) seven tenths	2) one tenth	3) four hundredths
4) seven hundredths	5) twenty-two hundredths	6) forty-six hundredths

Use >, < , or = to show how 4.092 and 4.089 compare.

① Write the numbers on grid paper with the decimal points lined up.

② Compare digits in the greatest place. Move to the right until you find digits that are not the same.

4 ones = 4 ones
0 tenths = 0 tenths
9 hundreths > 8 hundreths

So, 4.092 > 4.089.

4	.	0	9	2
4	.	0	8	9

To order numbers from least to greatest:

① Write the numbers on grid paper (decimal points lined up) and compare.

② Then arrange the numbers from least to greatest.

4.089, 4.09, 4.092

4	,	0	9	2
4	.	0	8	9
4	.	0	9	

Use place value to order the decimals from least to greatest.

1) 3.46, 3.64, 3.59	2) 22.97, 21.79, 22.86	3) 43, 43.22, 43.022
4) 10.02, 10.2, 1.02	5) 1.09, 1.9, 1.1	6) 7.54, 75.4, 7.4

Order set of numbers on number line.

7) 0.67, 0.7, 0.6	8) 0.03, 0.29, 0.019	9) 8.36, 8.01, 8.1

Comparing and Ordering Decimals

Use <, = or > to complete each statement.

0.01 ☐ 0.15	0.25 ☐ 0.21	0.30 ☐ 0.26
0.10 ☐ 0.12	0.35 ☐ 0.34	0.1 ☐ 0.4
34.4 ☐ 34.40	0.207 ☐ 0.27	0.08 ☐ 0.40
0.32 ☐ 0.309	6.12 ☐ 6.099	0.990 ☐ 0.99
2.36 ☐ 2.036	0.05 ☐ 0.15	1.19 ☐ 1.91

To *round* \$76.38 to the nearest dollar:

① Find the rounding place. \$7<u>6</u>.38

② Look at the digit to the right. \$76.<u>3</u>8

③ If that digit is less than 5, leave the digit in the rounding place as is. If the digit is 5 or greater, round up.

\$76.38 rounds to \$76.

You can use rounding to estimate a sum.

$3.76 + 0.85 + 4.09$

Round each number to the ones place.

$3.76 \longrightarrow 4$

$0.85 \longrightarrow 1$

$4.09 \longrightarrow \underline{4}$

Then add. 9

The sum is about 9.

Round each decimal to the nearest unit (ones place).

1) 1.679	2) 4.981	3) 12.602
4) 32.9744	5) 0.159	6) 2.008

Round each decimal to the nearest hundredth.

1) 1.679	2) 4.981	3) 12.602
4) 32.9744	5) 0.159	6) 2.008

Round each decimal to the nearest tenth.

7) 6.457	8) 15.0886	9) 0.1235
10) 1.036	11) 25.671	12) 6.390

Round each decimal to the nearest hundred. (Not hundredth)

1) 32,168.679	2) 314.981	3) 6,715.602
4) 532.9744	5) 650.159	6) 847.008

Round each decimal to the nearest ten. (not tenths)

1) 32,168.679	2) 314.981	3) 6,715.602
4) 532.9744	5) 650.159	6) 847.008

Add 3.25 + 12.6 + 18.93.

First estimate.

3.25	→	3
12.6	→	13
+18.93	→	19
		35

Then follow these steps.

① Line up the decimal points. Write in any needed zeros.

3.25
12.**6**0
+18.93

② Add as you would add whole numbers. Regroup when needed.

$$\begin{array}{r} {\scriptstyle 11} \\ 3.25 \\ 12.60 \\ +\,18.93 \\ \hline 34\,78 \end{array}$$

③ Place the decimal point.

$$\begin{array}{r} 3.25 \\ 12.60 \\ +\,18.93 \\ \hline 34.78 \end{array}$$ ← **Compare to your estimate.**

To subtract decimals, follow similar steps. Work from right to left and regroup when needed. Place the decimal point to complete the subtraction.

First estimate and then find each sum. No calculators. Show work.

1) 0.9 + 6.7 Estimate _____ Sum _____	2) 3.1 + 9.4 Estimate _____ Sum _____	3) 4.88 + 8.19 Estimate _____ Sum _____
4) 4.05 + 9.75 Estimate _____ Sum _____	5) 6 + 0 .22 + 0.78 Estimate _____ Sum _____	6) 9.104 + 5.01 + 7.99 Estimate _____ Sum _____

Find each difference. No calculators. Show work.

1) 8.5 – 4.2	2) 7.2 – 3.05	3) 5.07 – 2.8
4) 6.347 – 2.986	5) 14.2 – 9.86	6) 13.45 – 5.001
7) 22.7 – 12.06	11) 16.1 – 10.88	12) 1.79 – 0.879

Using a Problem-Solving Plan

Lincoln Middle School needs new smoke alarms. The school has $415 to spend. Alarms with escape lights cost $18, and alarms with a false-alarm silencer cost $11. The school wants 4 times as many escape-light alarms as silencer alarms. How many of each kind can the school purchase?

Read and Understand What facts are needed to solve the problem? *You need the costs of the alarms, $18 and $11; the amount to be spent, $415; and the fact that 4 times as many escape-light alarms as silencer alarms will be bought.*

Plan and Solve You can try values and check them to solve this problem.
Try: Buy 12 escape-light alarms and 3 silencer alarms.

Check: $12 \times \$18 = \$216$
$3 \times \$11 = \underline{\$\ 33}$
Add: $\$249$

$249 is a lot less than the $415 that the school has to spend. Continue with different values until you solve the problem.

Buy 20 escape-light alarms and 5 silencer alarms.

$20 \times \$18 = \$360$
$5 \times \$11 = \underline{\$\ 55}$
Add: $\$415$

Look Back and Check Check to see whether your answer agrees with the information in the problem. *Is the total amount spent $415, or slightly less? Are there 4 times as many escape-light alarms as silencer alarms?*

1) Steve won a cash prize in the geography bee. He gave half of his money to his brother. Then he spent $22.50 on a new sweater and put the rest, $56.25, into his saving account. How much money did Steve win?	2) Shelley, Julie, Samantha and Robert competed in a long-jump contest. Julie won the contest with a distance of 19.25 meters. Samantha jumped 8.65 meters less than Julie. Robert jumped 3.9 meters father than Samantha but 2.75 meters less than Shelley. How many meters did Shelley jump?

1) Mrs. Keenan needs batteries. AA batteries cost $3 per pack. D batteries cost $4 per pack. If she has $26 to spend and buys 3 times as many packs of AA batteries as D batteries, how many packs of each does she buy?	2) Mrs. Walker needs tissues for her classroom. One package of 3 boxes sells for $5. Another package of 2 costs $4. She has $19 and buys 11 boxes. How many packages of each kind does she buy?
3) Steve has $50 to spend on Cds. New ones cost $9 and used cost $7. He wants to buy more new CDs than used. How many of each kind can he buy?	4) Frank has $41 to spend on trading cards. A pack of 10 Pokemon cards costs $13 and a pack of 11 baseball cards costs $14. How may packs of each can he buy if he wants to spend all his money?

0.3 ← 1 decimal place
× 1.4 ← +1 decimal place
12
+ 030
0.42 ← 2 decimal places

When multiplying decimals, first multiply the factors as though they are whole numbers. Then add the number of decimal places in each factor to find the number of decimal places in the product.

Find each product. No calculators. Show work.

1) 0.9 X2.8	2) 3.1 X 77	3) 6.22 X 8
4) 19.6 X 2.03	5) 1.6 X3.7	6) 8.12 X 59
7) 12.3 X 6.1	8) 5.9 X1.2	9) 23.4 X 5.2
10) 4.8 X 42	11) 9.2 X 12.4	12) 120 X 7.6

Example 1: Multiply 10×0.65.

There is one zero in 10 so move the decimal point one place to the right.

$10 \times 0.65 = 6.5$

Check your answer using a paper and pencil.

0.65 ← 2 decimal places
×10 ← 0 decimal places
6.50 ← 2 decimal places

$6.50 = 6.5$

Example 2: Divide $15.5 \div 100$.

There are two zeros in 100 so move the decimal point two places to the left.

$15.5 \div 100 = 0.155$

Check your answer using a paper and pencil.

$$\begin{array}{r} 0.155 \\ 100\overline{)15.5} \\ -100 \\ \hline 550 \\ -500 \\ \hline 500 \\ -500 \\ \hline 0 \end{array}$$

Use <, =, or > to complete each statement.

1) $2.2 \times 10 \square\ 2.2(10)(0.1)$	2) $1.1 \div 10 \square\ 110 \div 100$	3) $60 \div 100 \square\ 600 \div 10$
4) $5 \times 0.3 \times 2 \square\ 10 \times 0.3$	5) $0.22 \div 10 \square\ 0.22 \div 0.1$	6) $0.004 \times 100 \square 10 \times 10 \times 0.004$
7) $5.5 \times 2 \times 10 \square\ 5.5 \times 100$	8) $(2 \times 5)0.14 \square\ 0.14(10)$	9) $6.8 \div 100 \square\ 680 + 10$

Multiplying and Dividing Decimals by 10, 100, 1000 and 1,000

Find each product or quotient. No calculators. Show work.

1) 2.7 x 10	2) 2.5(10)	3) 100(0.21)
4) 0.77 x 100	5) 10 x 0.2 x 1	6) 5 x 0.2 x 100
7) 2.64 x 100	8) 7.5 · 1,000	9) 0.5 x 2 x 20
10) 0.4 ÷ 10	11) 2.4 ÷ 100	12) 7 ÷ 100
13) 5.23 ÷ 10	14) 3 ÷ 1,000	15) 41 ÷ 100

① Multiply the dividend and divisor by 10 so that the divisor is a whole number.

$0.4\overline{)1.52}$

② Divide as with whole numbers.

$$\begin{array}{r} 38 \\ 4\overline{)15.2} \\ -12 \\ \hline 32 \\ -32 \\ \hline 0 \end{array}$$

③ Place the decimal point in the quotient above its place in the dividend. Insert zeroes as placeholders if necessary.

$$\begin{array}{r} 3.8 \\ 4\overline{)15.2} \\ -12 \\ \hline 32 \\ -32 \\ \hline 0 \end{array}$$

Find each quotient. No calculators. Show work.

1) $3 \div 0.12$	2) $1.5\overline{)84}$	3) $78 \div 15.6$
4) $6.4\overline{)23.68}$	5) $7.28 \div 9.1$	6) $3\overline{)4.11}$
7) $0.9\overline{)1.35}$	8) $0.5\overline{)0.935}$	9) $1.9\overline{)19.95}$
10) $12.96 \div 5$	11) $5\overline{)\$11.30}$	12) $0.4 \div 16$

Order of Operations

To find the value of an expression follow the *order of operations.*

First, do all operations inside parentheses.
Next, multiply and divide from left to right.
Then, add and subtract from left to right.

Example 1 Find the value of $6 + (3 + 4) \times 2$.

① Work inside parentheses. ⟶ **$(3 + 4) = 7$**

$6 + \mathbf{7} \times 2$

② Multiply next. ⟶ **$7 \times 2 = 14$**

$6 + \mathbf{14}$

③ Then, add.

$6 + 14 = 20$

Example 2 Compare $10 - (6 \div 2) + 1$ and $(10 - 6) \div 2 + 1$.

First, find the value of each expression.

$10 - (6 \div 2) + 1$	$(10 - 6) \div 2 + 1$
$10 - \quad 3 \quad + 1$	$\quad 4 \quad \div 2 + 1$
$\quad 7 \quad\quad + 1$	$\quad\quad 2 \quad\quad + 1$
$\quad\quad 8$	$\quad\quad\quad 3$

Then, use $<$, $=$, or $>$ to compare.

$8 > 3$

So,

$10 - (6 \div 2) + 1 > (10 - 6) \div 2 + 10.$

Find the value of each expression.

1) 3 = (4 + 1) x 2 a. 4 + 1 = _____ b. _____ x 2 = _____ c. 3 + _____ = _____	2) 24 ÷ (5 + 3) – 2 a. 5 + 3 = _____ b. 24 ÷ _____ = _____ c. _____ - 2 = _____
3) 2 + 6 x 3 ÷ 3 = _____	4) (6 + 2) x 3 ÷ 4 = _____
5) 7 + 5 x 2 – 6 = _____	6) 12 ÷ 3 x 5 – 6 = _____

Which operation would you perform first in each expression?

1) $4 + 6 \times 9$ _____	2) $(7 - 5) \times 3$ _____	3) $14 \div 2 \times 3$ _____
4) $18 - 5 + 3$ _____	5) $5 \times 2 + 6$ _____	6) $(9 + 14) - 8 \div 2$ _____

Use <, =, or > to complete each statement.

7) $9 + 3 \times 4 \square 9 + (3 \times 4)$	8) $(12 - 4) \times 3 \square 12 - (4 \times 3)$
9) $6 \div 3 + 4 \times 2 \square (6 \div 3) + 4 \times 2$	10) $3 \times (12 - 5) + 2 \square 3 \times 12 - (5 + 2)$
11) $15 - (12 \div 3) \square (15 - 12) \div 3$	12) $8 + 2 \times (9 - 7) \square 8 + (2 \times 9) - 7$
13) $10 + (10 \div 5) \square 10 + 10 \div 5$	14) $20 - (2 \times 6) \square (20 - 2) \times 6$

Unit: NUMBER RELATIONSHIPS and COMPUTATION
Objective: Add and subtract fractions and mixed numbers and express answers in simplest form.

Adding and Subtracting Fractions:

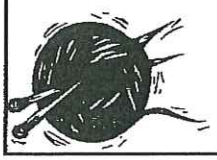
1) determine the least common denominator (LCD) of the fractions
2) rewrite each fraction as an equivalent fraction using the LCD
3) Add or subtract the fractions
4) Simplify if necessary

EX: Add $\frac{1}{2}+\frac{3}{8}$

1) **LCD of 2 and 8 is 8**
2) $\frac{1}{2}=\frac{4}{8}$
   $+\frac{3}{8}=\frac{3}{8}$
3) $\frac{7}{8}$
4) (can't be simplified)

EX: Subtract $3\frac{3}{5}-1\frac{1}{6}$

1) **LCD of 5 and 6 is 30**
2) $3\frac{3}{5}=3\frac{18}{30}$
   $-1\frac{1}{6}=-1\frac{5}{30}$
3) $2\frac{13}{30}$
4) (can't be simplified)

1.) $\frac{4}{6}+\frac{1}{3}=$	2.) $\frac{11}{12}-\frac{5}{8}=$
3.) $1\frac{3}{8}+2\frac{3}{4}=$	4.) $3\frac{5}{6}-1\frac{4}{5}=$
5.) Shelly has two pieces of yarn. One is $1\frac{1}{2}$ yards long and the other is $2\frac{3}{4}$ yards long. How much yarn does she have altogether? 	6.) Marty weighs 64 ¼ pounds and Nathan weighs 76 ½ pounds. How much more does Nathan weigh than Marty?

Unit: NUMBER RELATIONSHIPS and COMPUTATION

Objective: Multiply fractions and mixed numbers and express answers in simplest form.

Multiplying Fractions and Mixed Numbers:

1) Change Mixed numbers to improper fractions
2) Multiply numerators
3) Multiply denominators
4) Simplify if necessary

EX: multiply $\frac{1}{2}\times\frac{3}{8}$

1) **No mixed numbers**
2) $\frac{1}{2}\times\frac{3}{8}=\frac{3}{\quad}$
3) $\frac{1}{2}\times\frac{3}{8}=\frac{3}{16}$
4) (can't be simplified)

EX: Multiply $\frac{1}{3}\times 6\frac{3}{7}$

1) $6\frac{3}{7}=\frac{45}{7}$ as an improper fraction
2) $\frac{1}{3}\times\frac{45}{7}=\frac{45}{\quad}$
3) $\frac{1}{3}\times\frac{45}{7}=\frac{45}{21}$
4) Simplified: $\frac{45}{7}=2\frac{1}{7}$

1.) $\frac{5}{6}\times\frac{1}{2}=$

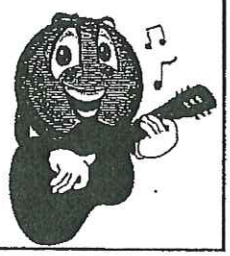
2.) $\frac{9}{10}\times\frac{2}{3}=$

3.) $2\frac{1}{2}\times 1\frac{2}{5}=$

4.) $2\frac{1}{4}\times 3\frac{1}{3}=$

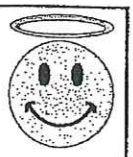
5.) Belinda lives 1 ½ times further from school than Jamie does. If Jamie lives 4 1/5 miles from school, how far does Belinda live?

6.) Mario practices his guitar every day for ¾ of an hour. How long does he practice for week?



Unit: KNOWLEDGE of STATISTICS

Objective: Determine the measures of central tendency (mean, median, and mode) and the range.



A number that helps **describe all of the data** in a data set is a **measure of central tendency.**
The **mean** is the sum of the data divided by the number of pieces of data.
The **median** is the middle number of the ordered data (least to greatest.)
The **mode** is the number or numbers that occur most often.
The **range** is the difference between the greatest and least values of the data set.

Examples:

Jacket Prices ($)			
25	34	39	41
45	52	27	22
56	61	15	27

Find the mean, median, mode, and range of the data.

$$\text{Mean} = \frac{25 + 34 + 39 + 41 + 45 + 52 + 27 + 22 + 56 + 61 + 15 + 27}{12}$$

$$= \frac{444}{12} = \mathbf{37}$$ The mean price of a jacket is $37.

Median = 15 22 25 27 27 34 39 41 45 52 56 61 (data ordered)

$$= \frac{34 + 39}{2} = \mathbf{36.5}$$ The median price of a jacket is $36.50.

Mode = **$27** because it is the only piece of data that occurs more than once.

Range = 61 – 15 = **$46**

1.) Find the mean, median, mode, and range for each set of data.

6, 9, 2, 4, 3, 6, 5

2.) Find the mean, median, mode, and range for each set of data.

13, 7, 17, 19, 7, 15, 11, 7, 21

3.) Find the mean, median, mode, and range for each set of data.

28, 32, 23, 43, 32, 27, 21, 34

4.) Find the mean, median, mode, and range for each set of data.

157, 124, 157, 124, 157, 139