

Warmup

1. Write the number six hundred thirty-two trillion, 7 hundred billion.

2. Calculate the powers of 10 from 10^1 to 10^{10} .

$10^1 = \underline{\hspace{2cm}}$

$10^5 = \underline{\hspace{2cm}}$

$10^9 = \underline{\hspace{2cm}}$

$10^2 = \underline{\hspace{2cm}}$

$10^6 = \underline{\hspace{2cm}}$

$10^{10} = \underline{\hspace{2cm}}$

$10^3 = \underline{\hspace{2cm}}$

$10^7 = \underline{\hspace{2cm}}$

$10^4 = \underline{\hspace{2cm}}$

$10^8 = \underline{\hspace{2cm}}$

3. Arrange these numbers in order from least to greatest: 6.5, 0.65, 0.065

#4 and #5
Fill in the
missing
factor.

4. $500 = 5 \cdot \underline{\hspace{2cm}}$

5. $8645 = 8.645 \cdot \underline{\hspace{2cm}}$

I. Scientific Notation

Scientific Notation:

Scientific Notation is used to write really large and really small numbers. To write a number in scientific notation write the number as a factor of a value times a power of ten.

The factor
is between
1 and 10

3.45×10^4

A power of 10 tells how
many places to move the
decimal point.

4. $500 = 5 \cdot \underline{\hspace{2cm}}$

$3254 = 3.254 \times \underline{\hspace{2cm}}$

5. $8645 = 8.645 \cdot \underline{\hspace{2cm}}$

$8,245,654 = \underline{\hspace{2cm}}$

II. Expanding Numbers Written in Scientific Notation

According to NASA the volume of the earth is $1.08321 \times 10^{12} \text{ km}^3$



Expand the numbers:

$$5.16 \times 10^7 =$$

$$6.12 \times 10^2 =$$

$$9.21 \times 10^8 =$$

$$8. 4.25 \times 10^{15} =$$

To Expand Scientific Notation

expand the exponent, then multiply by the factor or move the decimal based on the exponent.

A positive exponent, means move the decimal to the right.

$$4.23 \times 10^3$$
$$4.230 \rightarrow = 4230$$

3 places

III. Writing Numbers in Scientific Notation

According to NASA the mass of the earth in Kg is

5,972,400,000,000,000,000,000

To write in Scientific

Notation count how many places the decimal moves to write the factor between 1 and 10. Write the number of places the decimal moved as the exponent. 19,000,000

$$1.9000000 = 1.9 \times 10^7$$

7 places

Write the numbers in scientific Notation

$$465,000,000 =$$

$$610,000 =$$

$$645,000,000,000 =$$

$$10. 7,200,000,000 =$$

Warmup

1. What is the GCF of 64 and 16?

2. What is the prime factorization of 56?

3. What are the multiples of 8 from 8 to 80?

4. Write $\frac{12}{18}$ in simplest form.

5. $\frac{15}{20} - \frac{12}{20} = \underline{\hspace{2cm}}$

I. Least Common Multiple

Least Common Multiple:

The least common multiple of two or more numbers is the smallest number that is a multiple of each of the numbers.

Find the Least Common Multiple of 5 and 7.

Write the multiples of each number:

5: 5, 10, 15, 20, 25, 30, 35, 40,...

7: 7, 14, 21, 28, 35

The first (smallest) number that is a multiple of both is the LCM.

The LCM of 5 and 7 is 35

6. LCM means L _____ C _____ M _____

7. Write the word for each definition:

- _____ : numbers that multiply to give a product.
- _____ : The largest number that is a factor of each number.
- _____ : The smallest number that is a multiple of each number.
- _____ : The product of a number and a whole number.

8. Write the word for each definition:

The factors of 8 are _____

The multiples of 8 are _____

The prime factorization of 8 is _____

II. Calculating the LCM for a Pair of Number

What is the LCM of 3 and 10?

1. What are the multiples of 3? _____
2. What are the multiples of 10? _____
3. What is the smallest (least) number that is a multiple of both 3 and 10 (common)? _____

10. What is the LCM of 9 and 4?

1. What are the multiples of 9? _____
2. What are the multiples of 4? _____
3. What is the LCM of 9 and 4 ? _____

11.

12. What is the least common multiple of 5 and 7?

13.

14. What is the least common multiple of 8 and 9?

15.

III. GCF and LCM

Review from Lesson 29

Reduce using the GCF

$$\frac{24}{40} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

16. Reduce using the GCF

$$\frac{12}{28} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

Greatest Common Factor is used for reducing fractions

Preview of Lesson 42

Least Common Multiple is used for finding Common Denominators to add fractions.

Write the fractions with the same denominator

The LCM of 2 and 8 is _____

$$\frac{1}{2} = \frac{\quad}{\quad} = \frac{\quad}{8}$$

$$\frac{3}{8} = \frac{\quad}{\quad} = \frac{\quad}{8}$$

$$\frac{1}{2} + \frac{3}{8} = \frac{\quad}{\quad}$$

17. What is the GCF of 4 and 8?

18. What is the LCM of 4 and 8?

Warmup

1. *Solve and Check*

$$p - 32.7 = 12.3$$

2. $6t + -8t$

3. $4 - -3 = \underline{\hspace{2cm}}$

$$-5 + 8 = \underline{\hspace{2cm}}$$

$$-6 + -4 = \underline{\hspace{2cm}}$$

$$-3 - -9 = \underline{\hspace{2cm}}$$

4. The 20 students in Luke's Calculus group were told to conduct a survey, then calculate the mean (rounded to 1 decimal places), median, and mode of the data. The group decided to find the average of their last test grade. The data set is 70, 90, 90, 60, 60, 100, 80, 70, 60, 80, 40, 30, 30, 100, 100, 90, 100, 30, 40, 60.

mean (rounded to 1 decimal places)

Median

Mode(s) of the data

I. Line Plots

Use a line plot to graph the data for Luke's Calculus group

Each x represents one test with the score.

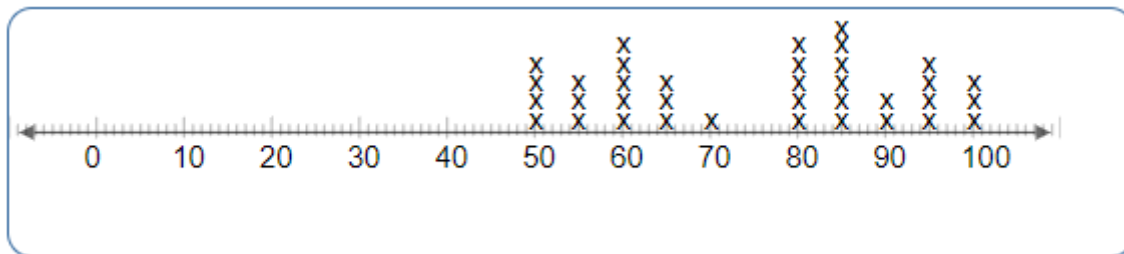
Line Plots: One method of graphing data to help analyze and summarize the information.



Tick Marks are **spaced**

Tick Marks include the lowest and highest members of the data.

5. The line plot represents the class grades on an arithmetic test. Use the graph to answer the following questions.



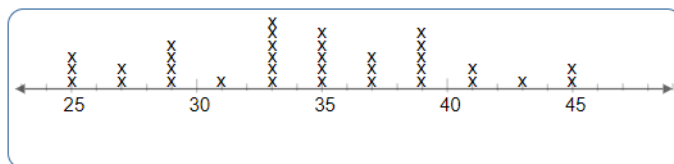
How many students scored 100? _____

How many students scored 75? _____

How many students are in the class (assuming all students took the test)? _____

8. The line plot represents the cost of a jacket at different clothing stores. Use the graph to answer the following questions.

How many stores sold the jacket for \$39? _____



How many stores sold the jacket for \$33? _____

How many stores are represented in the line plot? _____

Draw a line plot to represent the ages of the children on the swim team. The ages of the children are 11, 13, 14, 15, 12, 8, 9, 16, 14, 14, 13, 11, 10, 8, 16, 18, 17, 10, 14, 15, 13, 14, 15, and 13.

10. Draw a line plot to represent the ages of the children on the swim team. The ages of the children are 11, 13, 14, 15, 12, 8, 9, 16, 14, 14, 13, 11, 10, 8, 16, 18, 17, 10, 14, 15, 13, 14, 15, and 13.

$$0.2x = 10$$

A horizontal number line with arrows at both ends. There are 9 tick marks between -1 and 2, dividing the segment into 10 equal intervals. The tick marks are located at -1, -0.75, -0.5, -0.25, 0, 0.25, 0.5, 0.75, 1, 1.25, 1.5, 1.75, and 2. The tick marks at 0 and 1 are labeled with the numbers '0' and '1' respectively, positioned below the line.

A diagram showing a straight line with points A, B, and C. A ray starts at point B and passes through point D. The angle ABD is labeled 145° . The ray BD has an arrow pointing away from B.

4.82

4.28

[illegible]
$$\frac{1}{2} = \frac{\quad}{4} = \frac{\quad}{6} = \frac{\quad}{8} = \frac{\quad}{10} = \frac{\quad}{12}$$
$$\frac{5}{6} \bigcirc \frac{1}{2}$$
$$\frac{1}{4} \bigcirc \frac{1}{2}$$
 $\frac{4}{9} \bigcirc \frac{1}{2}$
$$\frac{1}{3} \bigcirc \frac{1}{2}$$
$$\frac{3}{5} \bigcirc \frac{1}{2}$$
$$\frac{7}{10} \bigcirc \frac{1}{2}$$
$$\frac{6}{7} \bigcirc \frac{1}{2}$$



What is the value of point x? _____
 Round the answer to the nearest whole number. _____

Rounding Fractions to the nearest Whole Number:

When the fractional part is **greater than or equal to $\frac{1}{2}$** , round up to the next whole number.
 Example: $2\frac{3}{4}$ rounds to 3

When the fractional part is **less than $\frac{1}{2}$** , remove the fractional part (**round down** to the whole number)

Example: $7\frac{5}{12}$ rounds to 7



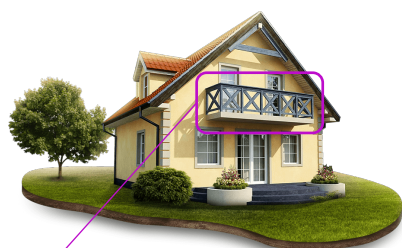
What fraction is point D? (in simplest terms) _____
 Round point D to the nearest whole number. _____

8.



What fraction is point B? (in simplest terms) _____
 Round point B to the nearest whole number. _____

II. Improper Fractions and Mixed Numbers



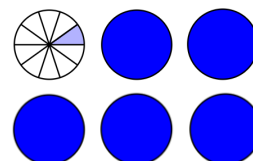
Weight limit for the balcony = 400 lbs.

What fraction of the circle is shaded?



Improper Fraction: _____

Mixed Number: _____



Improper Fraction:

An improper fraction is a fraction that has a numerator larger than the denominator.

Example: $\frac{10}{8} = \frac{5}{4}$

Mixed Number:

A mixed number is a whole number and a fraction with a numerator less than the denominator.

Example: $1\frac{2}{8} = 1\frac{1}{4}$

Determine if each fraction is a (P)proper or (I)improper fraction?

$$\frac{3}{5}$$

$$\frac{12}{17}$$

$$\frac{7}{2}$$

$$\frac{8}{9}$$

$$\frac{16}{4}$$

11. Is $\frac{15}{13}$ a proper or improper fraction?

Express the amount shown as a fraction and mixed number



12.



Convert Improper Fractions to Mixed Numbers:

Divide the denominator into the numerator.

The remainder is the numerator

Keep the denominator

$$\frac{9}{8} =$$

$$\frac{3}{2} =$$

$$\frac{21}{10} =$$

$$\frac{8}{3} =$$

$$\frac{13}{7} =$$

14. Write the improper fraction $\frac{5}{4}$ as a mixed number in simplest form.

15.

Convert Mixed Numbers to improper Fractions:

To calculate the numerator:

1. Multiplying the denominator by the whole number
2. Add the numerator to the product

Keep the denominator

$$1\frac{1}{8} =$$

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

$$2\frac{1}{10} =$$

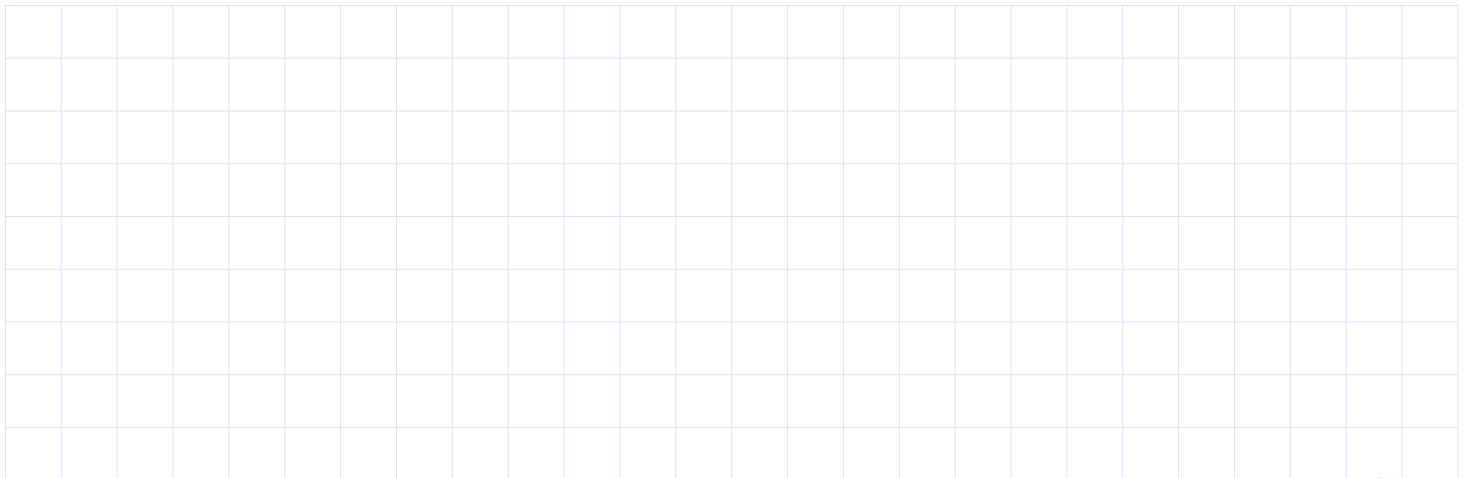
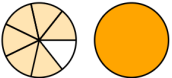
$$2\frac{2}{3} =$$

$$1\frac{6}{7} =$$

16. Write the mixed number $2\frac{1}{5}$ as an improper fraction.

17.

18.



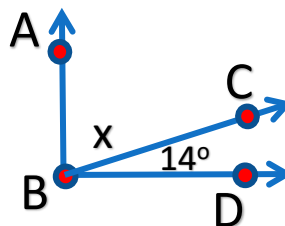
Warmup

1. Solve and Check

$$\frac{t}{5.5} = 2$$

2. How many numbers are in the interval $20 - 29$?

3. $\angle ABD$ is a right angle.
 $\angle CBD = 14^\circ$, find x



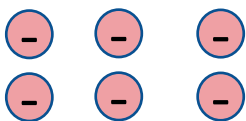
4. Calculate the mean, median and mode of the data.

1, 3, 5, 2, 6, 3, 7, 3, 5

I. Multiplying Integers

Three piles of negative two

$$(3)(-2)$$



$$(3)(-2) = (-1)(3)(2)$$

What is the opposite of three times two?

$$(-1)(3)(2)$$

$$(-3)(-2) = (-1)(-1)(3)(2)$$

What is the opposite of the opposite of three times two?

$$(-3)(2) = (-1)(3)(2)$$

What is the opposite Of three times two?

Same Signs

Different Signs

Multiplication with Integers

Same Signs

Multiply the numbers
Sign is **Positive**

$(-4)(-3)$
 $(4)(3) = 12$

The signs the same
the answer is positive
 $(-4)(-3) = +12$

$(4)(3)$
 $(4)(3) = 12$

The signs the same
the answer is positive
 $(4)(3) = +12$

Different Signs

Multiply the numbers
Sign is **Negative**

$(5)(-6)$
 $(5)(6) = 30$

The signs the different
the answer is negative
 $(5)(-6) = -30$

$(-5)(6)$
 $(-5)(6) = 30$

The signs the different
the answer is negative
 $(-5)(6) = -30$

$(-4)(-2) =$

$(-7)(8)$

$(6)(-3) =$

$(-10)(3)$

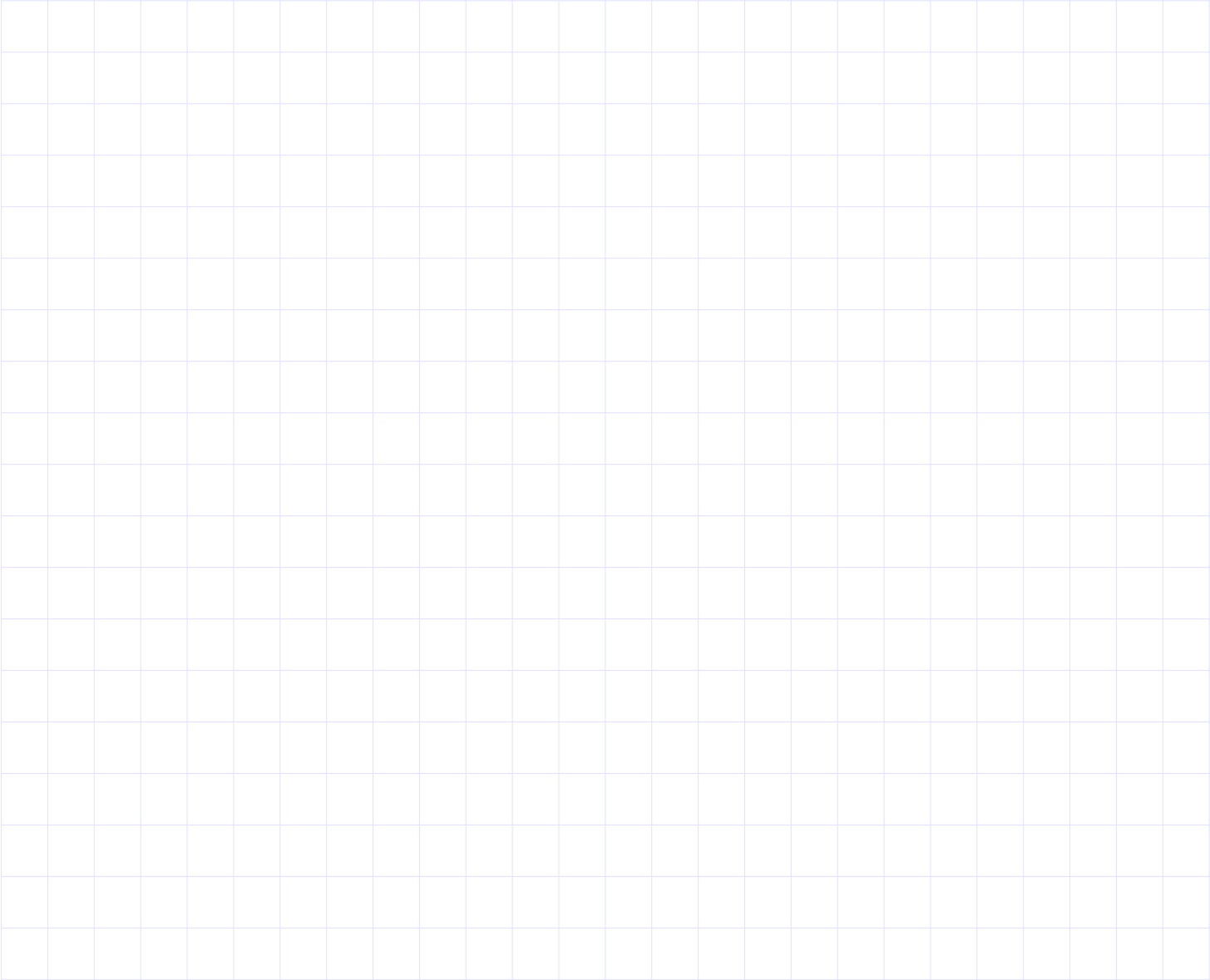
6. $(-8)(5) =$

7. $(-4)(-6)$

8. $(-4)(0)$

9. $(3)(8) =$

10. $(7)(-1)$



Warmup

1. What is 65400 written in scientific notation?

2. How many numbers are in the interval 1 – 15?

3.

$$-6(1) =$$

$$-8(-8) =$$

$$1(-3) =$$

$$4(-5) =$$

4. Expand:

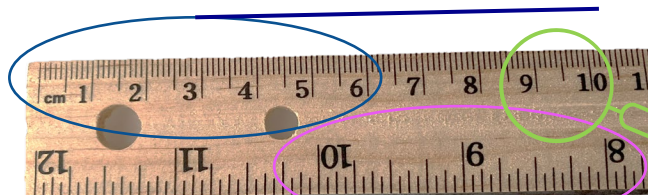
$$4(p + 8)$$

5. Calculate the mean, median and mode of the data. 6,8,4,8,5,9

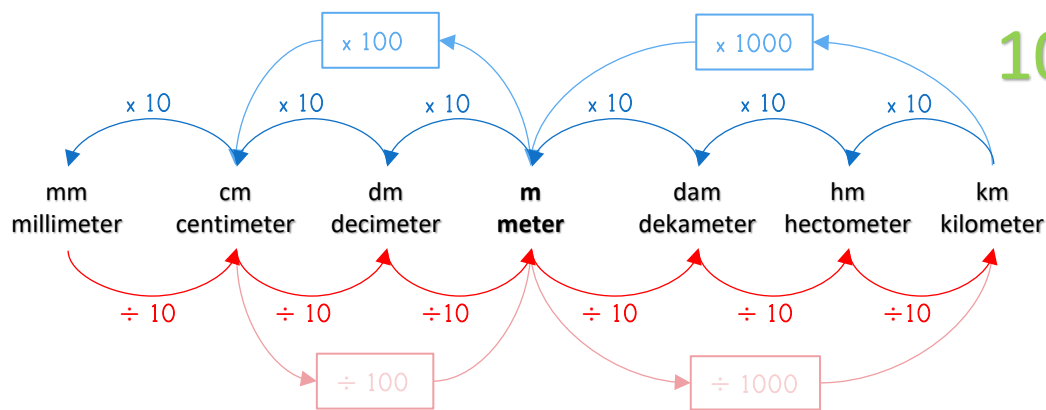
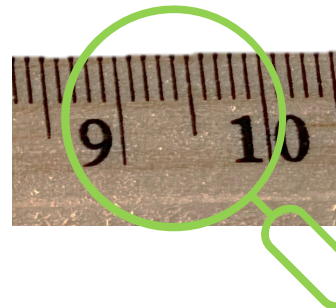
I. Metric System

Metric System:

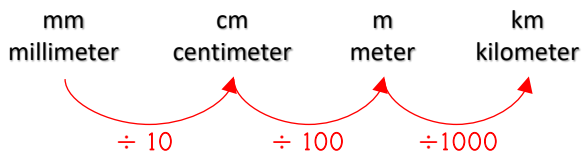
A unit of measurement based on powers of 10.



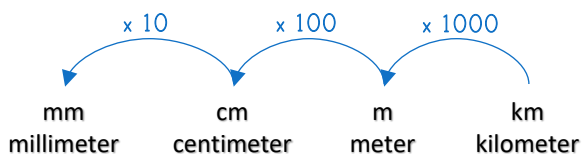
10 mm = 1 cm

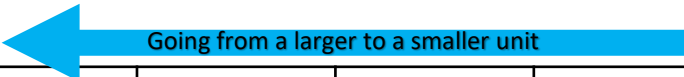


mm	cm	dm	m	dam	hm	km
						1
			250			



Going from a smaller to a larger unit						
mm	÷ 10	cm	÷ 100	m	÷ 1000	km
3000000						
1250000						
10.6700000						

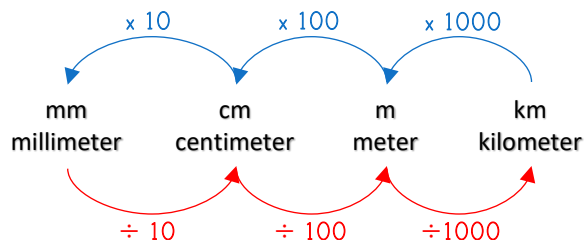


 Going from a larger to a smaller unit						
mm	$\times 10$	cm	$\times 100$	m	$\times 1000$	km
						8
						46
						11. 54

II. Conversions Using the Metric System

13 cm = _____ mm

45 mm = _____ cm



82 cm = _____ m

350 m = _____ cm

42 km = _____ m

35 mm = _____ km

34000000 km = _____ m

82 cm = _____ mm

12.

284500 cm = _____ km

13.

2748 m = _____ mm

14.

9 cm = _____ mm

Use this area to write notes to yourself and practice unit conversions

III. Frequency Tables, Mean, Median, Mode, and Range

A survey was taken of mothers with children ages 0-18. The mother's ages are 20-59.

1. Determine the intervals

The scale is 20-59

How many numbers in the scale?

interval

	Tally	Frequency

20-29: 20, 21, 22, 23, 24, 25, 26, 27, 28, 29

30-39: 30, 31, 32, 33, 34, 35, 36, 37, 38, 39

40-49: 40, 41, 42, 43, 44, 45, 46, 47, 48, 49

50-59: 50, 51, 52, 53, 54, 55, 56, 57, 58, 59

Divide the number by 4 (to determine the 4 intervals)

The first number is 20. The interval should have _____ members, therefore the interval is 20 - _____

Calculate the other intervals

2. Enter the data into the table

20, 23, 24, 56, 45, 54, 20, 23, 48, 48, 37, 37, 45, 56, 31, 36, 34, 35, 41, 48

3. Determine the Mean: (Add all the ages, then divide by the number of ages.

4. Median:

3. Mode:

4. Range:

Warmup

1.

$-6 + 1 = \underline{\hspace{2cm}}$

$4 + -6 = \underline{\hspace{2cm}}$

$-8 + -4 = \underline{\hspace{2cm}}$

$9 + 8 = \underline{\hspace{2cm}}$

2.

$9 - (-2) = \underline{\hspace{2cm}}$

$-1 - (-4) = \underline{\hspace{2cm}}$

$-7 - 8 = \underline{\hspace{2cm}}$

$3 - 6 = \underline{\hspace{2cm}}$

3.

$-6(-7) = \underline{\hspace{2cm}}$

$-5(8) = \underline{\hspace{2cm}}$

$4(-2) = \underline{\hspace{2cm}}$

$9(3) = \underline{\hspace{2cm}}$

4. Evaluate: if $a=9$, $b=6$, and $c = 8$
 $ab - 4(8 - 7) + c$

I. Dividing Integers

Division with Integers

Same Signs

Divide the numbers
Sign is **Positive**

$$\begin{array}{r} -9 \\ -3 \end{array}$$

$$\begin{array}{r} 9 \\ 3 \end{array}$$

$9 \div 3 = 3$

The signs the same
the answer is positive

$$\begin{array}{r} -9 \\ -3 \end{array} = 3$$

$9 \div 3 = 3$

The signs the same
the answer is positive

$$\begin{array}{r} 9 \\ 3 \end{array} = 3$$

Different Signs

Divide the numbers
Sign is **Negative**

$$\begin{array}{r} 8 \\ -2 \end{array}$$

$$\begin{array}{r} -8 \\ 2 \end{array}$$

$8 \div 2 = 4$

The signs different
the answer is negative

$$\begin{array}{r} 8 \\ -2 \end{array} = -4$$

$8 \div 2 = 4$

The signs the different
the answer is negative

$$\begin{array}{r} -8 \\ 2 \end{array} = -4$$

$-16 \div 8 =$

$-10 \div -2 =$

$4 \div 2 =$

$6 \div -3 =$

$-63 \div 9 =$

$81 \div -9 =$

5.

$-8 \div 4 =$

6.

$$\begin{array}{r} -12 \\ -3 \end{array} =$$

The rules for multiplication and
division are the similar:

Calculate the number, then determine the sign.

Same signs: positive answer

Different signs: negative answer

7.

II. Solve equations with Integers

$$a = -64 \div 8$$

a =

$$b = 9 (-7)$$

b =

$$c = 6 - -5$$

c =

$$d = -7 + -5$$

d =

8.

$$6 + -8 = s$$

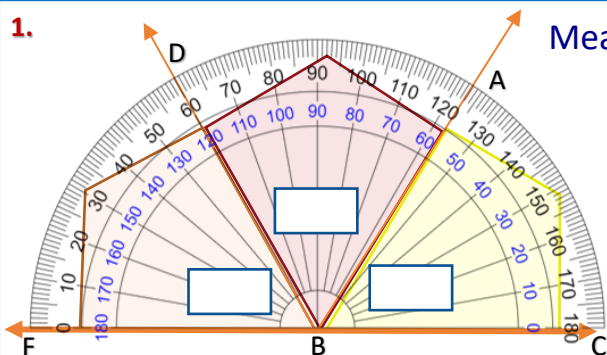
9.

$$\frac{-20}{-10} = z$$

10.

Warmup

1.



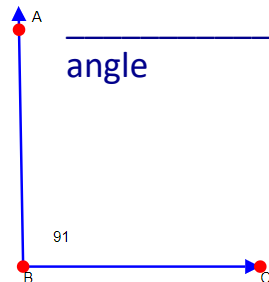
Measure and Classify each angle.

 $\angle ABC =$ _____ $\angle ABD =$ _____ $\angle DBF =$ _____

2.

 $\angle ABC$ is a(n) _____

angle



3.

Write the word for each definition:

Two or more angles whose sum is 180°

Equal in measure

An angle with a measurement of 90 degrees

An angle with a measurement of exactly 180 degrees

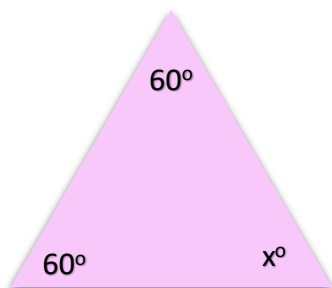
Two or more angles whose sum is 90°

A polygon with three sides

An angle with a measurement less than 90° An angle with a measurement greater than 90° and less than 180°

A simple closed figure in a plane formed by three or more line segments.

I. Angles of a Triangle

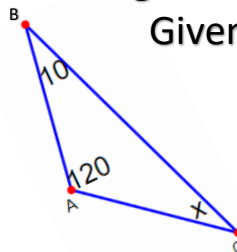
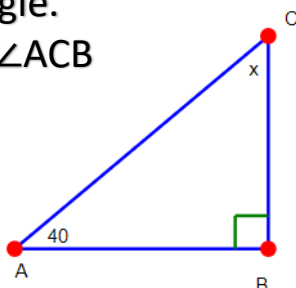


Angles of a Triangle:

The sum of the angles of a triangle is 180°

4. Triangle ABC is not drawn to scale.

Given: Triangle ABC

 $\angle A = 120$ $\angle B = 10$ Find: $\angle C$ 5. $\angle ABC$ is a right angle.Find the measure of $\angle ACB$
given that $\angle CAB = 40^\circ$ 

6-8.

I. Classifying Triangles by their angles

Acute Triangle:

A triangle with three acute angles.



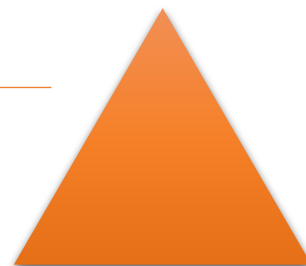
Right Triangle: A triangle with one right angle.



Obtuse Triangle: A triangle with one obtuse angle.



Classify the triangles by their angles:





9. Triangle ABC is not drawn to scale.

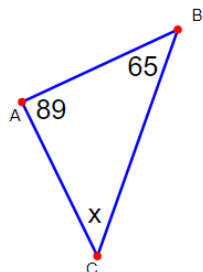
Given: Triangle ABC

$$\angle A = 89$$

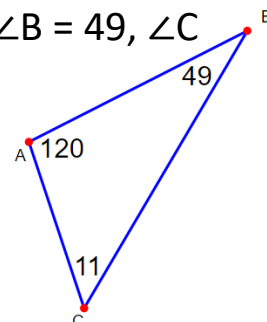
$$\angle B = 65$$

Find: $\angle C$

Classify the triangle



10. Given: Triangle ABC, $\angle B = 49$, $\angle C = 11$, and $\angle A = 120$
Classify the triangle



11-13

III. Classify Triangle by their sides

Scalene Triangle: A triangle with three sides of unequal measurement



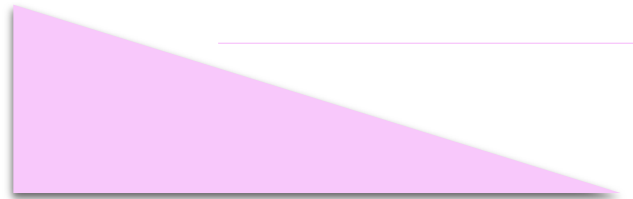
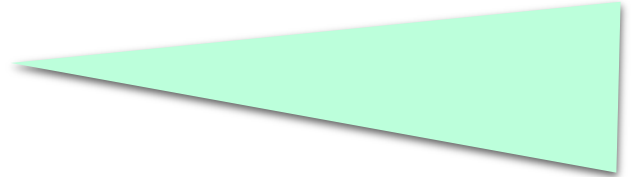
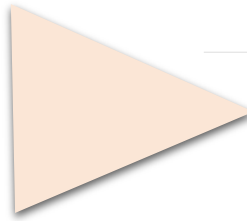
Isosceles Triangle: A triangle with two congruent sides



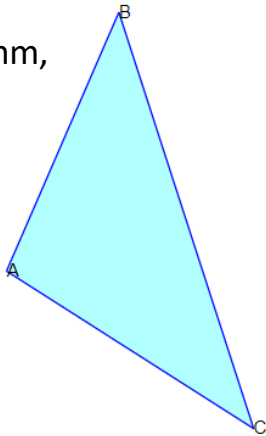
Equilateral Triangle: A triangle with (all) three congruent sides



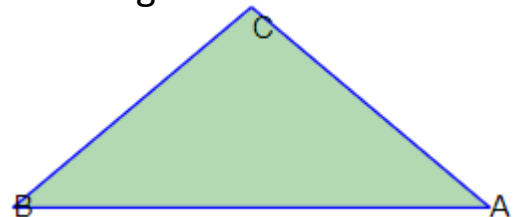
Classify the triangles by their sides:



14. Given: Triangle ABC
 $AC=5780$ mm, $BC=28615$ mm,
and $AB=4946$ mm
Classify the triangle using
the lengths of the sides.



15. Given: Triangle ABC
 $AC=5$ inches, $BC=5$ inches,
and $AB=8$ inches
Classify the triangle.



16-18