

MATH



# Digital Math Notebook

MATH



# Math Key Terms

## Addition

- \* Sum
- \* Total
- \* Increased by
- \* More
- \* Addend
- \* Together
- \* Combined
- \* Perimeter
- \* Deposit
- \* In all
- \* And
- \* Plus

## Subtraction

- \* Fewer
- \* Remain
- \* Reduced by
- \* Difference
- \* How many More
- \* Greater than
- \* Less than
- \* Withdrawal
- \* Minus
- \* Left
- \* Farther
- \* Take away

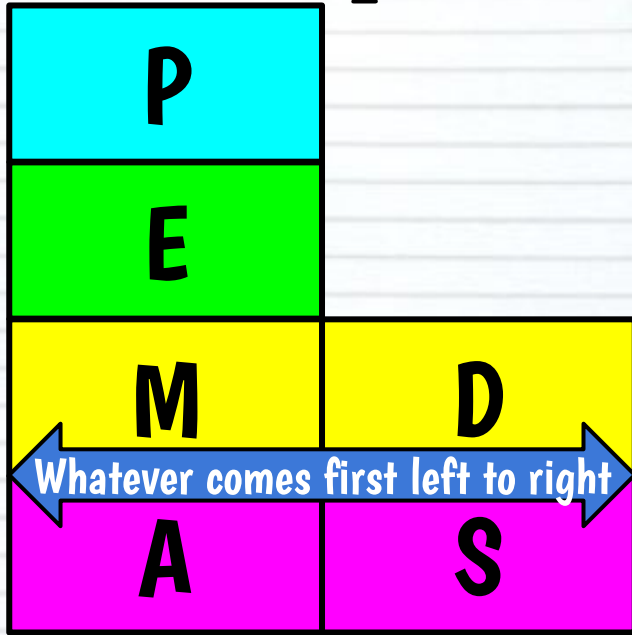
## Multiplication

- \* Product
- \* Rows of
- \* Factors
- \* Product of
- \* Double
- \* Triple
- \* Multiple
- \* Area
- \* Volume
- \* Each
- \* Twice
- \* Groups of

## Division

- \* Divisor
- \* Equal Pieces
- \* Dividend
- \* Divided up
- \* Distribute Equally
- \* Equal Pieces
- \* Quotient
- \* In each
- \* Average
- \* Each
- \* Cut up
- \* Groups of

# Order of Operations



**P** - Parenthesis  $\{$ ,  $\}$ ,  $[$ ,  $]$ , or  $()$

**E** - Exponents  $10^4$

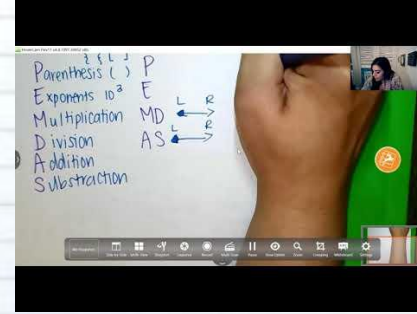
**M** - Multiplication  $\times$ ,  $*$ , or  $5(6)$

**D** - Division  $/$ ,  $\square$ ,  $\frac{1}{4}$ , or  $\div$

**A** - Addition  $+$

**S** - Subtraction  $-$

Check out a video here



## ORDER OF OPERATIONS

**\*Remember to do what is inside the grouping symbols first\***

$$(2 + 2) \times 7$$

$$4 \times 7$$

$$= 28$$

$$(2 \times 6) \div 3 \times 6$$

$$12 \div 3 \times 6$$

$$4 \times 6$$

$$= 24$$

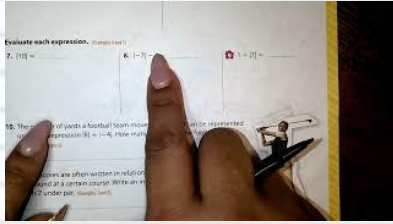


# Chapter 3

## Notes

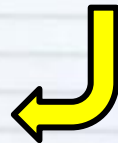
# Ch. 3 Lesson 1: Integers and Absolute Value

Check out a video here!



# Ch. 3 Lesson 2: Adding Integers

Check out a video here!

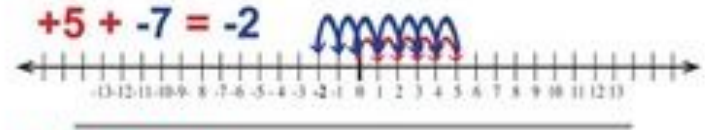


HANDOUT FOR INTERACTIVE NOTEBOOKS OR FOR TEACHING

## Adding + & - Integers

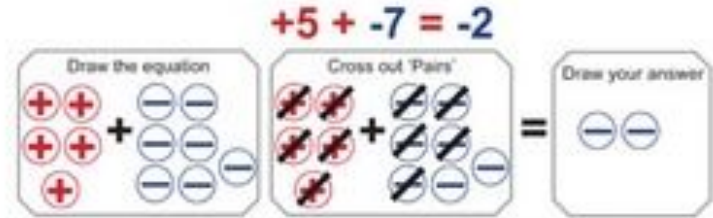
### Number Line Method

Start by counting to the right the number of + numbers starting at 0 then go left if the number is negative. Red indicates + hops, Blue indicates - hops.



### Visual Method

Draw circles to model how many + and how many -. Cross out one + to one -. What amount is left is the answer. Remember: It's like a pair of socks - one + and one - cancel each other or make a 'pair' like a pair of socks!



### Algorithm Method

Look at the numbers. If both numbers are +(positive) then just add. If both numbers are negative then just add the value of the numbers and keep the sign as - for the answer. Is one number in the equation + and one -? then...Which one is larger? Has the greatest 'absolute value'? Take the sign of the largest number and take the difference to get your answer.

$$+5 + -7 = -2 \quad +9 + -7 = +2 \quad -2 + -7 = -9$$

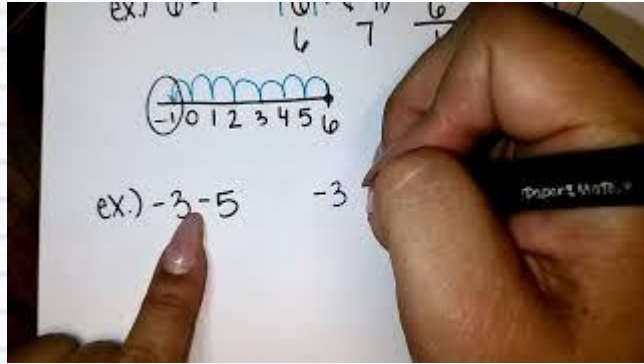
7 is larger than 5 so the answer will be - (negative), the difference is 2, so the answer is -2

9 is larger than 7 so the answer will be + (positive), the difference is 2, so the answer is +2

Both integers are negative (-) so the answer will be -. Then just add the numbers and keep the sign.

# Ch. 3 Lesson 2: Subtracting Integers

Check out a video here!



Keep the first number the same

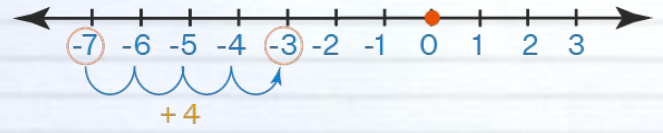
$$12 - (-6) = 12 + 6 = 18$$

Change the sign of the second number to its' opposite. (In this case, a negative to a positive)

Change the subtraction sign to an addition sign.

So...  $12 - (-6) = 18$

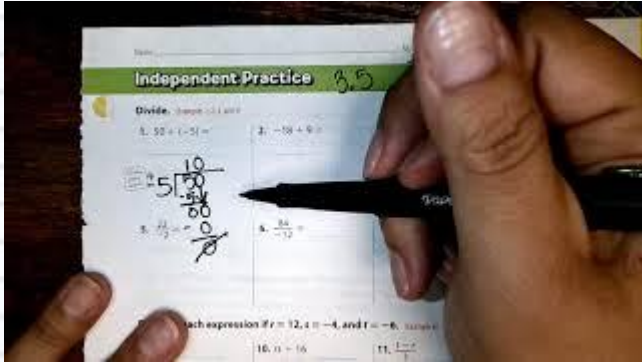
Subtraction of Integers on a Number Line



$$\begin{aligned} -7 - (-4) &= -7 + 4 \\ &= -3 \end{aligned}$$

# Ch. 3 Lesson 4 and 5: Multiplying and Dividing Integers

Check out a video here!



## *Multiplying & Dividing Integers*

1) Signs the same: answer is positive

$$(+)(+) = (+)$$

$$(-)(-) = (+)$$

$$(+)\div(+)=(+)$$

$$(-)\div(-)=(+)$$

2) Signs different: answer is negative

$$(+)(-) = (-)$$

$$(-)(+) = (-)$$

$$(+)\div(-) = (-)$$

$$(-)\div(+) = (-)$$

\* Remember to work 2 numbers at a time \*



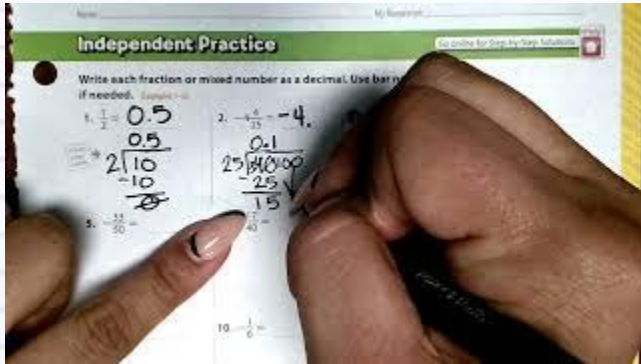
# Chapter 4

## Notes



# Ch. 4 Lesson 1: Repeating and Terminating Decimals

Check out a video here!



## Types of Decimals

### FRACTIONS TO DECIMALS

Take the numerator and divide it by the denominator by using \_\_\_\_\_

$$\frac{3}{4} \rightarrow 4 \overline{)3} \rightarrow .75$$

### REPEATING

A decimal number that has digits that \_\_\_\_\_ go on forever.

$$\frac{2}{3} \rightarrow \begin{array}{r} .333... \\ \underline{3} \end{array}$$

THE DECIMAL

### TERMINATING

A decimal number that has digits that \_\_\_\_\_ go on forever.

$$\frac{3}{10} \rightarrow .3$$

THE DECIMAL

Percentage to Decimal Conversion



2.5%

00.025

Shift the decimal point to two places towards left

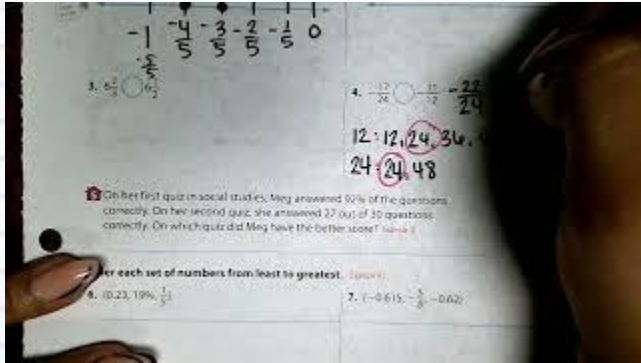
= 0.025

2.5% = 0.025  
(In Percent) (In Decimal)



# Ch. 4 Lesson :2 Compare and Order Rational Numbers

Check out a video here!



## Percentage to Decimal Conversion



$$\begin{array}{l} 2.5\% \\ \text{00.}\overline{\text{0}}\text{2.5} \quad \text{Shift the decimal point} \\ \text{to two places towards left} \\ = 0.025 \end{array}$$

$$\begin{array}{l} 2.5\% = 0.025 \\ \text{(In Percent)} \quad \text{(In Decimal)} \end{array}$$

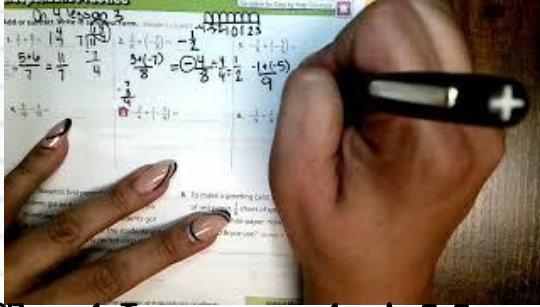
If you **cannot** convert the denominator into a **power of 10**, divide the numerator with the denominator to get your answer.

$$\begin{array}{r} 3 \\ \hline 8 \end{array} \quad \begin{array}{r} 0.375 \\ 8 \overline{) 3.000} \\ \underline{24} \phantom{00} \\ 60 \phantom{0} \\ \underline{56} \phantom{0} \\ 40 \\ \underline{40} \\ 0 \end{array}$$



# Ch. 4 Lesson :3 Adding and Subtracting Fractions with Like Denominators

Check out a video here!



# Ch. 4 Lesson 4: Adding and Subtracting Fractions with Unlike Denominators

Check out a video here!



## 2.1 and 2.3: ADDING AND SUBTRACTING FRACTIONS

### STEPS TO SUCCESSFUL ADDING AND SUBTRACTING FRACTIONS:

Fractions need a COMMON DENOMINATOR to be added or subtracted!!!

1. Change all mixed fractions to improper fractions.
2. Create a common denominator.
3. Follow same steps of adding and subtracting integers.

### Example 3:

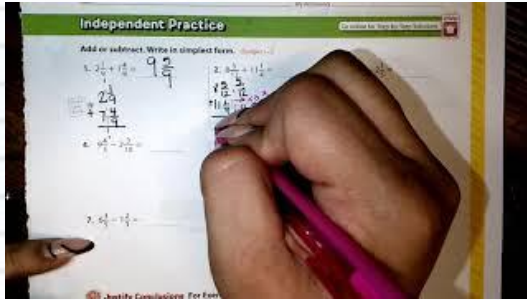
$$\begin{aligned} 1. \quad -\frac{4}{7} + \left(-\frac{1}{7}\right) &= -\frac{4}{7} - \frac{1}{7} \\ &= \frac{-4-1}{7} = -\frac{5}{7} \end{aligned}$$

$$\begin{aligned} 2. \quad \frac{2}{6} + \frac{1}{3} &= \frac{2}{6} + \frac{2}{6} = \frac{2+2}{6} \\ &= \frac{4}{6} = \frac{2}{3} \end{aligned}$$

$$\begin{aligned} 3. \quad -\frac{4}{15} + \frac{2}{5} &= -\frac{4}{15} + \frac{6}{15} \\ &= \frac{-4+6}{15} = \frac{2}{15} \end{aligned}$$

# Ch. 4 Lesson 5: Adding and Subtracting Mixed Numbers

Check out a video here!



Adding and subtracting / mixed numbers.

1. Convert mixed numbers to fractions

$$3\frac{1}{4} - 1\frac{3}{5} = \frac{13}{4} - \frac{8}{5} =$$

2. Find the LCM and subtract

$$\frac{65}{20} - \frac{32}{20} = \frac{33}{20} =$$

3. Convert back to a mixed number

$$1\frac{13}{20}$$

## Subtracting Mixed Numbers (with Regrouping)

$$\begin{array}{r} 12\frac{2}{11} + \frac{11}{11} = \frac{13}{11} \\ - 4\frac{9}{11} \\ \hline 7\frac{4}{11} \end{array}$$

1. ALWAYS subtract fractions first:  
But I can't subtract 9 from 2!

$$\frac{2}{11} - \frac{9}{11}$$

2. Borrow 1 from the whole number and add it to your first fraction.

$$12\frac{2}{11} + \frac{11}{11} = \frac{13}{11}$$

3. Subtract the fractions

$$\begin{array}{r} \frac{13}{11} \\ - \frac{9}{11} \\ \hline \frac{4}{11} \end{array}$$

4. Subtract the whole numbers

$$\begin{array}{r} 12 \\ - 4 \\ \hline 7 \end{array}$$

Answer:

$$7\frac{4}{11}$$

Regroup the whole as a fraction with the same denominator. Since the denominator is ninths 1 whole =  $\frac{9}{9}$

Regrouping  $\frac{9}{9}$  plus the  $\frac{3}{9}$  you started with gives you  $\frac{12}{9}$

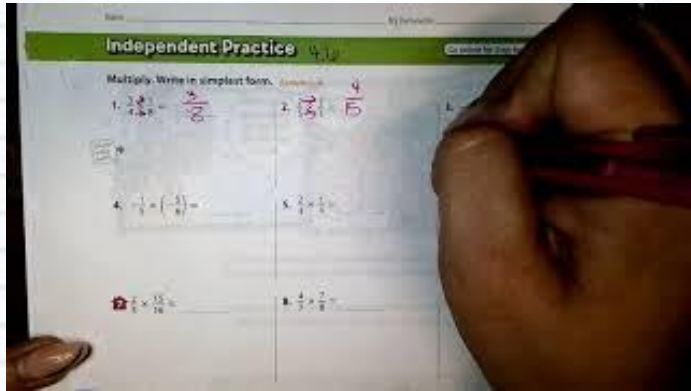
$$2\frac{3}{9} + \frac{9}{9} = 2\frac{12}{9}$$

$$\begin{array}{r} - 1\frac{5}{9} \\ \hline 1\frac{7}{9} \end{array}$$

# Ch. 4 Lesson 6

## Multiply Fractions

Check out a video here!



Multiply the numerators

$$\frac{2}{5} \times \frac{3}{4} = \frac{6}{20}$$

Multiply the denominators

$$\frac{2}{5} \times \frac{3}{4} = \frac{6}{20}$$

Reduce the fraction if necessary

$$\frac{6}{20} = \frac{3}{10}$$

# MULTIPLYING FRACTIONS

**Remember!** 1. Multiply  
2. Multiply  
3. Simplify

**Step 1:** Write whole number as fraction; write mixed number as improper fraction.

Fraction multiplied by a fraction

$$\frac{2}{3} \times \frac{3}{4}$$

Whole number multiplied by a fraction

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

$$\downarrow$$

$$\frac{9}{1} \times \frac{2}{5}$$

Fraction multiplied by a mixed number

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

$$\downarrow$$

$$\frac{2}{3} \times \frac{7}{3}$$

**Step 2:** Multiply the numerators

$$\frac{2}{3} \times \frac{3}{4} = \frac{6}{12}$$

$$\frac{9}{1} \times \frac{2}{5} = \frac{18}{5}$$

$$\frac{2}{3} \times \frac{7}{3} = \frac{14}{9}$$

**Step 3:** Multiply the denominators

$$\frac{2}{3} \times \frac{3}{4} = \frac{6}{12}$$

$$\frac{9}{1} \times \frac{2}{5} = \frac{18}{5}$$

$$\frac{2}{3} \times \frac{7}{3} = \frac{14}{9}$$

**Step 4:** Write answer in simplest terms

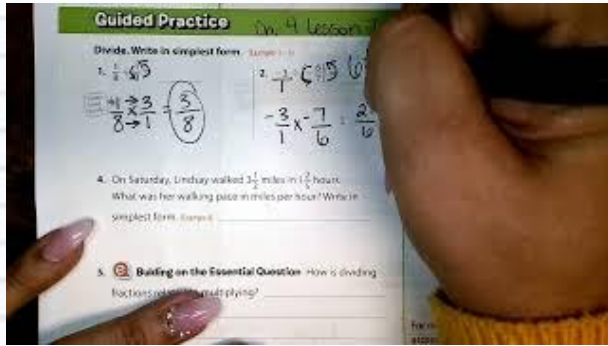
$$\frac{6}{12} = \frac{1}{2}$$

$$\frac{18}{5} = 3\frac{3}{5}$$

$$\frac{14}{9} = 1\frac{5}{9}$$

# Ch. 4 Lesson 8 Dividing Fractions

Check out a video here!



## Dividing fractions

Multiply by the reciprocal of the divisor.

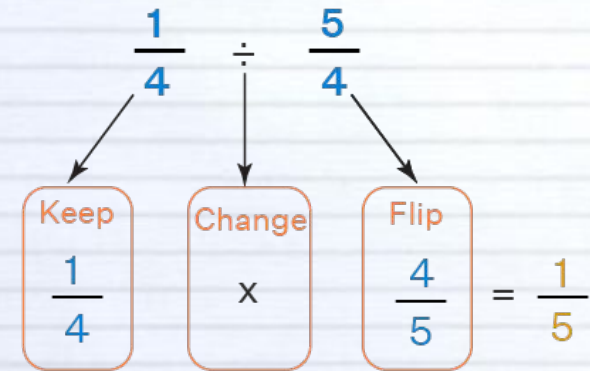
$$\frac{3}{4} \div \frac{1}{8}$$

$$\frac{3}{4} \times \frac{8}{1}$$

Find the product and simplify

$$\frac{3}{4} \times \frac{8}{1} = \frac{24}{4} = 6$$

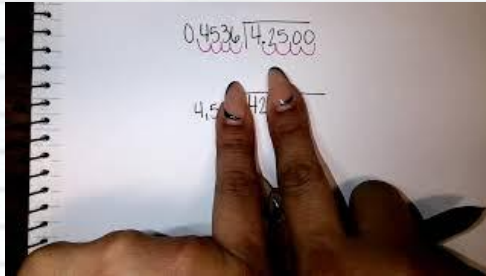
### Dividing Fractions



Reciprocal

# Ch. 4 Lesson : 7 Customary & Metric Conversions

Check out a video here!



## Customary to Metric Conversion

Length	Weight/Mass	Capacity
1 inch = 2.54 centimeters	1 ounce ≈ 28.3 grams	1 fluid ounce ≈ 29.6 milliliters
1 foot ≈ 0.305 meter	1 pound ≈ 0.454 kilogram	1 quart ≈ 0.946 liter
1 yard ≈ 0.914 meter		1 gallon ≈ 3.79 liters
1 mile ≈ 1.61 kilometers		

## Metric to Customary Conversion

Length	Weight/Mass	Capacity
1 centimeter ≈ 0.39 inch	1 gram ≈ 0.035 ounce	1 milliliter ≈ 0.034 fluid ounce
1 meter ≈ 3.28 feet	1 kilogram ≈ 2.20 pounds	1 liter ≈ 1.06 quarts
1 meter ≈ 1.09 yards		1 liter ≈ 0.264 gallon
1 kilometer ≈ 0.621 mile		

# Measurement

**Conversion Table**

### Conversion Rule

Use the equivalent measures and multiply or divide.

**Examples**

To change inches to centimeters:

$$12 \times 2.54 = 30.48 \text{ cm}$$

number of inches      number of centimeters in one inch

To change centimeters to inches:

$$51 \div 2.54 = 20.08 \text{ in}$$

number of centimeters in one inch      number of inches

### Capacity

1 fl oz = 29.574 ml	1 ml = .034 fl oz
1 pt = .473 L	1 L = 2.113 pt
1 qt = .946 L	1 L = 1.057 qt
1 gal = 3.785 L	1 L = .264 gal

### Length and Distance

1 in = 2.54 cm	1 mm = .039 in
1 ft = 30.48 cm	1 cm = .394 in
1 yd = .914 m	1 m = 1.094 yd
1 mi = 1.609 km	1 km = .621 mi

U.S. Customary	Metric
<i>in</i> = inch	<i>mm</i> = millimeter
<i>ft</i> = foot	<i>cm</i> = centimeter
<i>yd</i> = yard	<i>m</i> = meter
<i>mi</i> = mile	<i>km</i> = kilometer
<i>fl oz</i> = fluid ounce	<i>ml</i> = milliliter
<i>pt</i> = pint	<i>L</i> = liter
<i>qt</i> = quart	<i>g</i> = gram
<i>gal</i> = gallon	<i>kg</i> = kilogram
<i>oz</i> = ounce	
<i>lb</i> = pound	

**Abbreviations**

### Weight

1 oz = 28.350 g	1 g = .035 oz
1 lb = .454 kg	1 kg = 2.205 lb
	1 ton = .907 metric tons
	1 metric ton = 1.102 tons

# Chapter 1

## Notes



# Ch. 1 Lesson : 1 Rates

Check out a video here!



## Convert to Unit Rates:

$$\frac{6 \text{ miles}}{3 \text{ hours}}$$

$$\frac{6 \div 3}{3 \div 3} = \frac{2 \text{ mi.}}{1 \text{ hr.}}$$

$$= 2 \text{ mi./hr.}$$

$$\frac{40 \text{ words}}{2 \text{ min.}}$$

$$\frac{40 \div 2}{2 \div 2} = \frac{20 \text{ words}}{1 \text{ min.}}$$

$$= 20 \text{ words/min.}$$

$$\frac{5 \text{ miles}}{2 \text{ hours}}$$

$$\frac{5 \div 2}{2 \div 2}$$

$$= 2.5 \text{ mi./hr.}$$

# Unit Rates:

ratios that compare  
**x** units of one quantity to  
**1** unit of another quantity

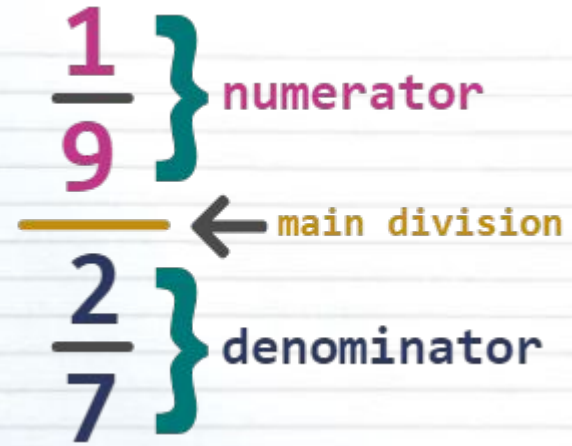
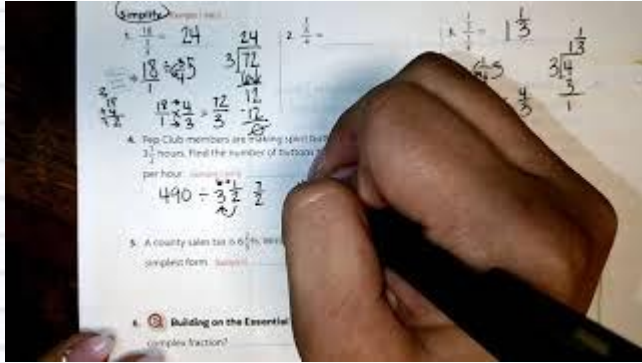
## Examples:

**2** cats : **1** dog  $\rightsquigarrow$  "2 cats for every dog"

**37** jelly beans : **1** bag  $\rightsquigarrow$  "37 jelly beans per bag"

# Ch. 1 Lesson : 2 Complex Fractions and Rates

Check out a video here!



## Complex Fractions -

a fraction whose numerator, denominator or both are fractions.

We want to get a unit rate, which means we want a denominator of 1.

Normally that means dividing by the denominator, but since its a fraction, we multiply by its reciprocal instead.

$$\frac{\frac{1}{4}}{2} \quad \frac{1}{4} \div \frac{2}{1} \quad \frac{\frac{1}{24}}{\frac{7}{10}} \quad \frac{5}{14}$$

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

$$\frac{17}{10} \cdot \frac{10}{7} = \frac{17}{7}$$

$$\frac{3}{\frac{3}{5}} \quad \frac{3}{1} \div \frac{3}{5} \quad \frac{3}{1} \times \frac{5}{3} = \frac{5}{1} = 5$$

**Simplifying a complex fraction means making both the numerator and denominator into integers.**

# Ch. 1 Lesson : 3

## Convert Unit Rates

Check out a video here!



Convert 5 gallons to cups.

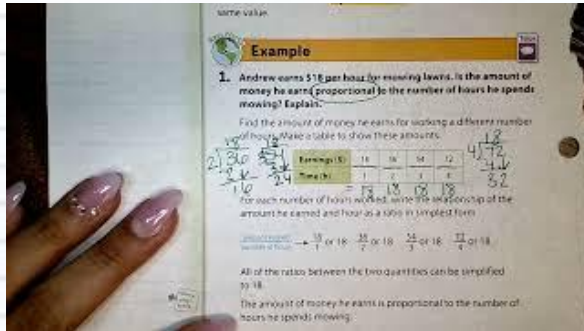
$$\frac{5 \cancel{\text{ gallons}}}{1} \times \frac{16 \text{ cups}}{1 \cancel{\text{ gallon}}} =$$

Customary Units of Measure	
Smaller	Larger
12 inches	1 foot
16 ounces	1 pound
8 pints	1 gallon
3 feet	1 yard
5,280 feet	1 mile

Metric Units of Measure	
Smaller	Larger
100 centimeters	1 meter
1,000 grams	1 kilogram
1,000 milliliters	1 liter
10 millimeters	1 centimeter
1,000 milligrams	1 gram

# Ch. 1 Lesson : 4 Proportional Vs. Not Proportional

Check out a video here!



### Proportional

Direct variation

Constant of variation

$y = -7x$

$y = kx$

X	Y
1	14
2	28
3	42

X	Y
5	40
9	72
22	176

### Non-Proportional

$y = mx + b$

$y = -9x + 5$

$y = 3x + 8$

X	Y
1	4
2	6
3	8

X	Y
-8	88
-5	70
-2	52

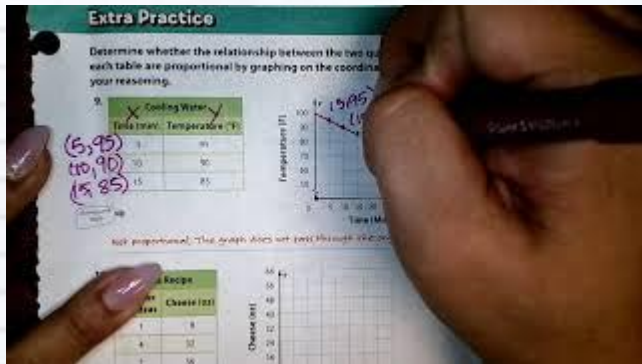
$y = \frac{1}{4}x - 4$

$y = \frac{2}{3}x - 4$

X	Y
---	---

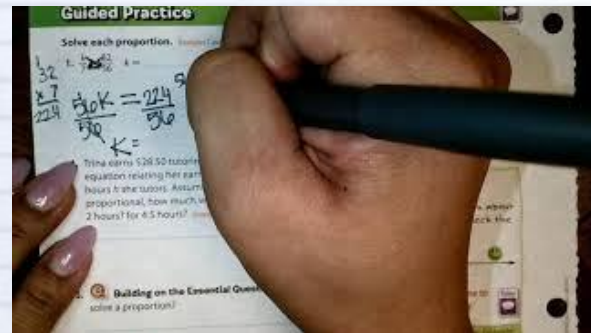
# Ch. 1 Lesson : 5 Graph Proportional Relationships

Check out a video here!

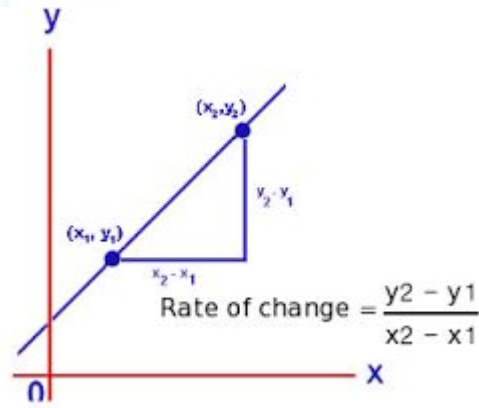


# Ch. 1 Lesson : 6 Solve Proportional Equations

Check out a video here!

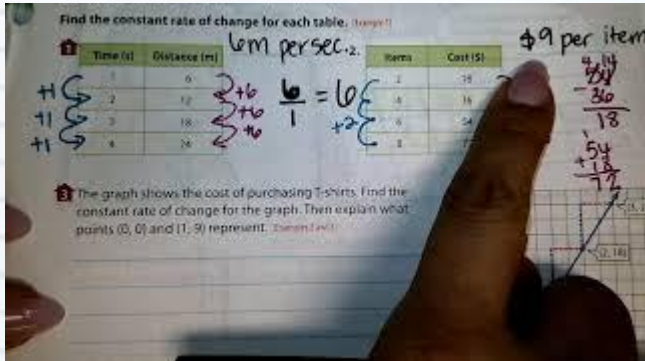


Ch. 1 Lesson : 7  
 Constant Rate of Change  
 Check out a video here!



Ch. 1 Lesson : 8  
 Slope

Check out a video here!



Ch. 1 Lesson : 9  
 Direct Variation

Check out a video here!



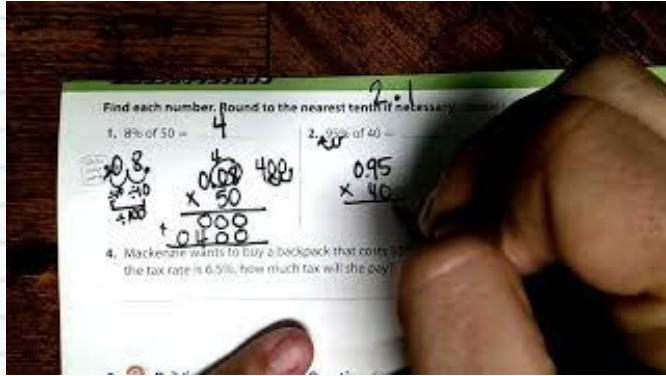
# Chapter 2

## Notes

# Ch. 2 Lesson : 1

## Find the Percent of a Number

Check out a video here!



\$50 ; 15% off

$$15\% = 0.15$$

$$\$50 \times 0.15 = \$7.50$$

$$\$50 - \$7.50 = \$42.50$$

## 3 ways to solve Percent of a Number Problems

### Multiply by a Decimal

Find 5% of 180

$$5\% = 0.05$$

$$0.05 \times 180 = 9$$

### Use Proportional Reasoning

Find 30% of 400

$$30\% = 30/100$$

$$\frac{30}{100} = \frac{?}{400}$$

$$? = 120$$

### Multiply by a fraction

Find 135% of 60

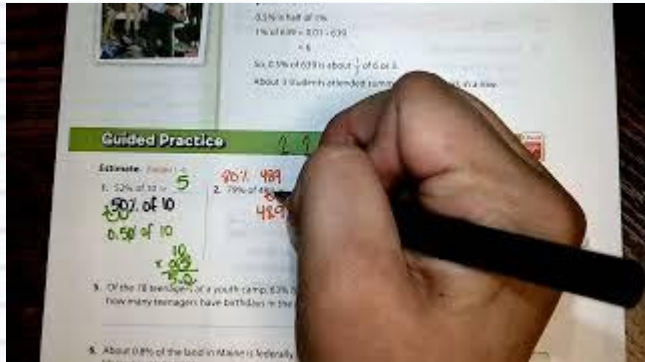
$$135\% = 135/100$$

$$60 = 60/1$$

$$\frac{135}{100} \times \frac{60}{1} = \frac{810}{10} = 81$$

# Ch. 2 Lesson 2 : Estimate the Percent of a Number

Check out a video here!



## Estimate Using Compatible Numbers

$$\begin{array}{l} 8\% \text{ of } 868 \\ \downarrow \qquad \downarrow \\ 10\% \text{ of } 870 \\ 87.0 \end{array}$$

## 3 ways to solve Percent of a Number Problems

### Multiply by a Decimal

Find 5% of 180

$$5\% = 0.05$$
$$0.05 \times 180 = 9$$

### Use Proportional Reasoning

Find 30% of 400

$$30\% = 30/100$$
$$\frac{30}{100} \times \frac{400}{1} = \frac{?}{1}$$
$$? = 120$$

### Multiply by a fraction

Find 135% of 60

$$135\% = 135/100$$
$$60 = 60/1$$
$$\frac{135}{100} \times \frac{60}{1} = \frac{810}{10} = 81$$



# Ch. 2 Lesson 3 and 4 : Percent of a Number

Check out a video here!



# Solving Word Problems with Percents

Taylor gave Tobin 35% of the rings in her jewelry collection for Christmas. If Taylor started with 20 rings, how many did she give Tobin?

## Step 1: Identify **KNOWN**s and **UNKNOWN**

Taylor gave Tobin **35%** of the rings in her jewelry collection for Christmas. If Taylor started with **20 rings**, how many did she give Tobin?

## Step 2: Plug **values** into proportion

$$\frac{\text{PART}}{\text{TOTAL}} = \frac{\text{PERCENT}}{100} \rightarrow \frac{x}{20} = \frac{35}{100}$$

## Step 3: Solve proportion

$$\frac{x}{20} = \frac{35}{100} \rightarrow 100x = 700 \rightarrow x = 7 \text{ rings}$$

$$\frac{\text{part}}{\text{whole}} = \frac{\%}{100}$$

$$\frac{\text{is}}{\text{of}} = \frac{\%}{100}$$

Percent of a Quantity	
PART	PERCENT
WHOLE	100
→ What number is 5% of 300?	
$\frac{x}{300} = \frac{5}{100}$	$\frac{100x = 5(300)}{100} = \frac{1500}{100}$ $x = 15$
→ 12 is 40% of what number?	
$\frac{12}{x} = \frac{40}{100}$	$\frac{40x = 12(100)}{40} = \frac{1200}{40}$ $x = 30$
→ 18 is what percent of 24?	
$\frac{18}{24} = \frac{x}{100}$	$\frac{24x = 18(100)}{24} = \frac{1800}{24}$ $x = 75$

# Ch. 2 Lesson 5 : Percent of Change

Check out a video here!



## How to Calculate Percentage Increase or Decrease

$\% \text{ change} = \frac{\text{final} - \text{initial}}{\text{initial}} \times 100\%$

$\% \text{ increase} = \frac{250 - 150}{150} \times 100\%$   
 $\% \text{ increase} = 66.7\%$

$\% \text{ decrease} = \frac{120 - 150}{150} \times 100\%$   
 $\% \text{ decrease} = -20\%$

sciencenotes.org

## Calculating Percent Change

Calculate the percent change:

**107** ← Starting Value

**86** ← Final Value

**STEP 1:** Find the absolute value of the difference

$$\begin{array}{cc} \text{Starting} & \text{Final} \\ |107 - 86| = |21| = 21 \end{array}$$

**STEP 2:** Divide by the starting value.

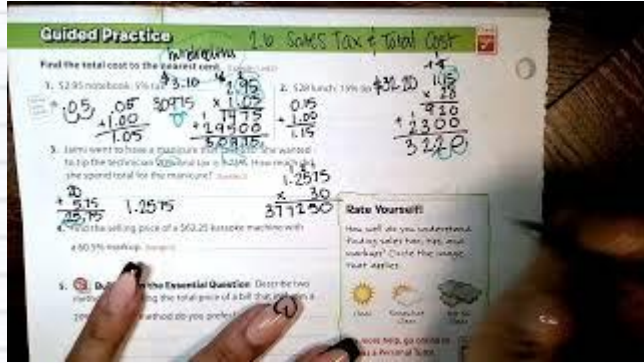
$$21 \div 107 = 0.196 \quad \leftarrow \text{Express as a decimal}$$

**STEP 3:** Multiply by 100

$$0.196 \times 100 = \boxed{19.6\% \text{ change}}$$

# Ch. 2 Lesson 6: Sales Tax & Total Cost

Check out a video here!



**HOW MUCH DID JASMINE PAY IN TOTAL?**

$$a = \text{total cost}$$

$$a = \underbrace{54}_{\text{cost of jeans}} + \underbrace{(0.08 \cdot 54)}_{\text{sales tax}}$$

$$a = 54 + 4.32$$

$$a = \boxed{\$58.32}$$

# Calculate 20% Tip

**Before Tip**

SUBTOTAL	12.74
TAX 7%	0.89
TOTAL	13.63
TIP	_____
TOTAL	_____

**Step 1: Find 10%**

$$13.63 \text{ TOTAL}$$

$$\underline{13.63} \text{ MOVE DECIMAL}$$

$$1.363 \text{ 10\% OF TOTAL}$$

**Step 2: Double it**

$$1.363 \times 2 = 2.726$$

**Step 3: Round**

$$2.726 \approx 2.73$$

**After Tip**

SUBTOTAL	12.74
TAX 7%	0.89
TOTAL	13.63
TIP	2.73
TOTAL	\$16.36

## CALCULATING SALES TAX

$$\text{Shirt } \$15.99 \times \text{Sales Tax } 7\% = \$1.12$$

$$\text{Shirt } \$15.99 + \text{Sales Tax } \$1.12 = \text{Total Cost } \$17.11$$



# Ch. 2 Lesson 7 : Discounts

Check out a video here!



$$\begin{array}{r} 7.99 \text{ Girls Shirt} \\ \times \quad .2 \\ \hline 1.598 \text{ Extra 20\% discount} \end{array}$$

$\begin{array}{r} 7.99 \\ - 1.59 \\ \hline 6.40 \\ \text{\$6.40} \end{array}$ <p>Subtract 20% discount from the sale price New price with 20% discount</p>
$\begin{array}{r} 6.4 \\ \times \quad .07 \\ \hline \$0.448 \end{array}$ <p>Find the Sales Tax Sales Tax</p>
$\begin{array}{r} 6.40 \\ + \quad 0.45 \\ \hline \text{\$6.85} \end{array}$ <p>Add Sales Tax Final price</p>

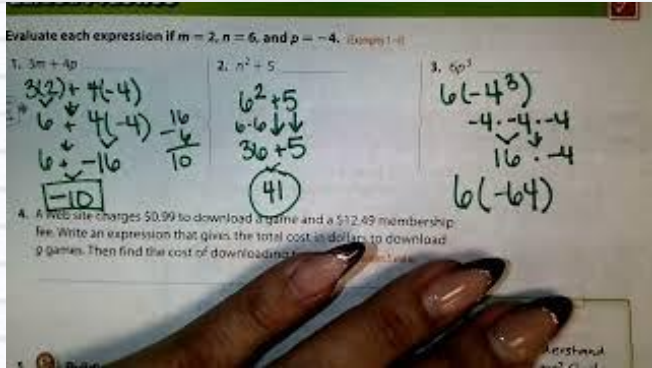
# Chapter 5

## Notes

# Ch. 5 Lesson : 1

## Evaluate Expressions

Check out a video here!



### evaluate an algebraic expression

To evaluate an algebraic expression means to find a numerical value for it, given particular values.

### evaluating expressions ... given $z = 10$

$$6 + z$$

$$6 + z = 6 + 10 \\ = 16$$

$$5z$$

$$5z = 5 \times 10 \\ = 50$$

$$20 - z$$

$$20 - z = 20 - 10 \\ = 10$$

$$z^2$$

$$z^2 = 10 \times 10 \\ = 100$$

### evaluating expressions ... given $a = 2$

$$4(a + 4)$$

If  $a = 2$ :

$$4(a + 4) \\ = 4(2 + 4) \\ = 8 + 16 \\ = 24$$

$$a^2 + 2ab + b^2$$

If  $a = 1$ ,  $b = 2$ :

$$a^2 + 2ab + b^2 \\ = 1^2 + (2 \times 1 \times 2) + 2^2 \\ = 1 + 4 + 4 \\ = 9$$

#### Numerical Expression

#### Word Expression

$$8 \times 43 - 13$$

Eight times 43 minus 13.

$$8 \times (43 - 13)$$

8 times the difference of 43 and 13.

$$12 \times (5 + 25)$$

12 times the sum of 5 and 25.

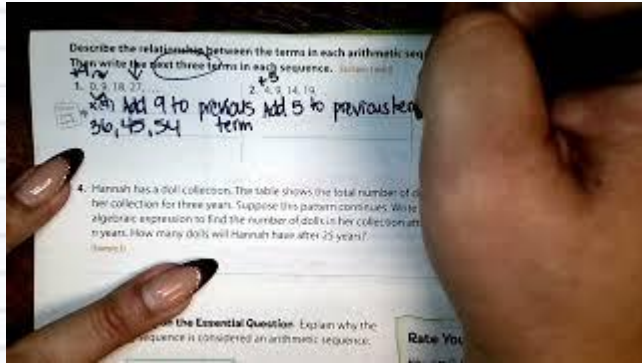
$$(20 \times 3) + (5 \times 3)$$

The sum of 3 twenties and 3 fives.

# Ch. 5 Lesson : 2

## Find a Pattern in a Sequence

Check out a video here!



# Ch. 5 Lesson : 4

## Distributive Property

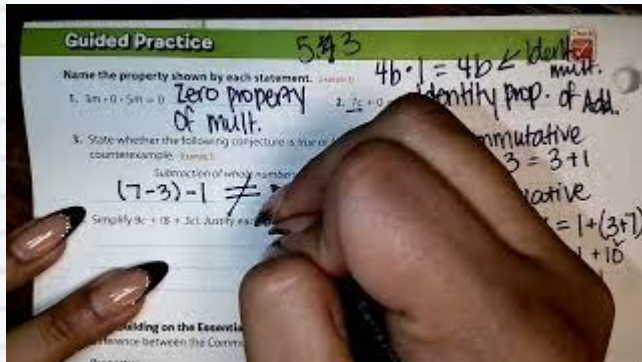
Check out a video here!



# Ch. 5 Lesson : 3

## Properties & Operations

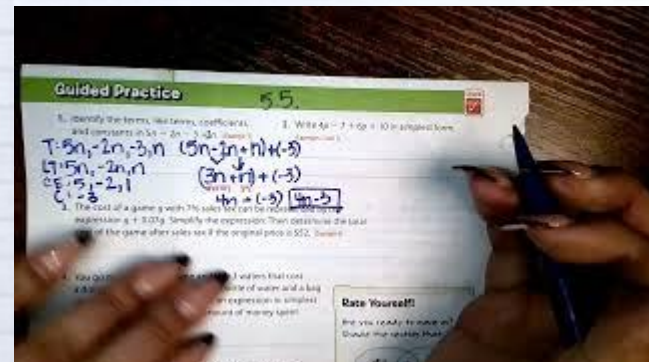
Check out a video here!



# Ch. 5 Lesson : 5

## Parts of an Expression

Check out a video here!



# Chapter 6

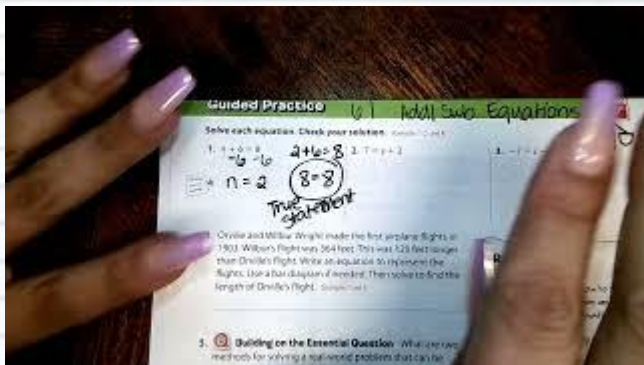
## Notes



# Ch. 6 Lesson : 1

## Add and Subtract Equations

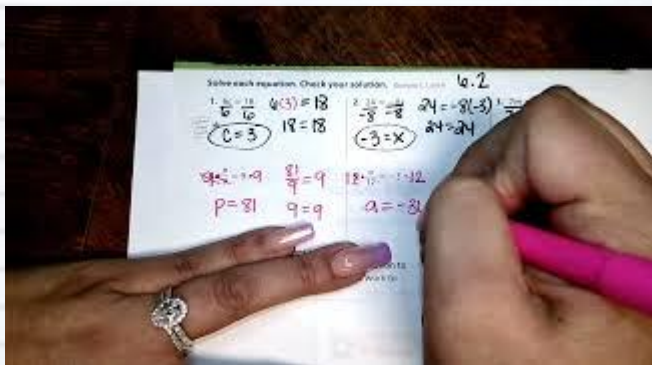
Check out a video here!



# Ch. 6 Lesson : 2

## Multiply and Divide Equations

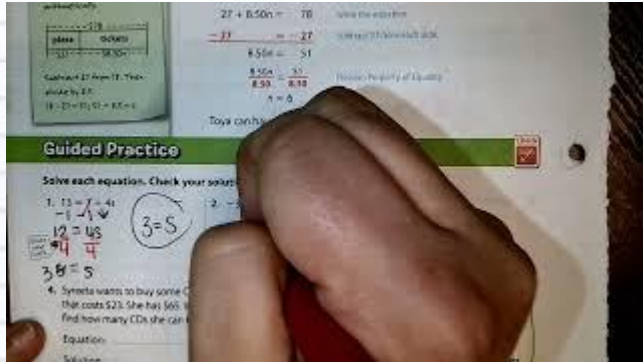
Check out a video here!



SOLVING ONE STEP EQUATIONS	
$+$ $5 + x = -10$ $-5 \quad -5$ $x = -15$ $5 + -15 = 10 \checkmark$	$-$ $x - 7 = -10$ $+7 \quad +7$ $x = -3$ $-3 - 7 = -10 \checkmark$
$\times$ $-5x = 10$ $\div -5 \quad \div -5$ $x = -2$ $5 \times 2 = 10 \checkmark$	$\div$ $\frac{x}{5} = 10$ $\times 5 \quad \times 5$ $x = 50$ $50 \div 5 = 10 \checkmark$

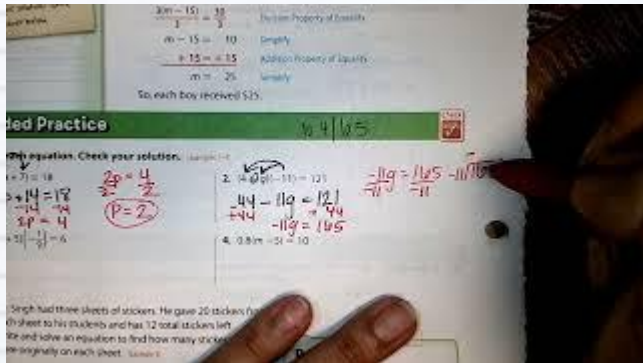
# Ch. 6 Lesson : 5

Check out a video here!



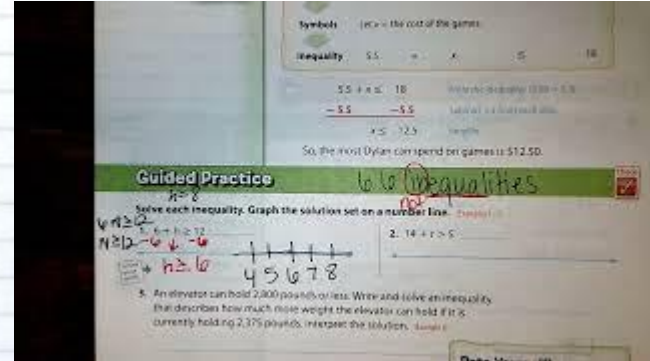
# Ch. 6 Lesson : 6

Check out a video here!



# Ch. 6 Lesson : 7

Check out a video here!



# Ch. 6 Lesson : 8

Check out a video here!



# Chapter 7

## Notes

# Ch. 7 Lesson : 1

## Classify Angles

Check out a video here!



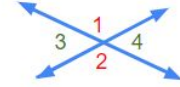
### Angle Pair Relationships

#### Adjacent Angles



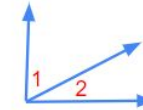
Angles 1 and 2 are adjacent angles. They share a common side.

#### Vertical Angles



Angles 1 and 2 are vertical angles. They are congruent (equal in size). Angles 3 and 4 are also vertical angles.

#### Complementary Angles



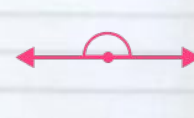
Angles 1 and 2 are complementary angles. They have a sum of  $90^\circ$ .

#### Supplementary Angles



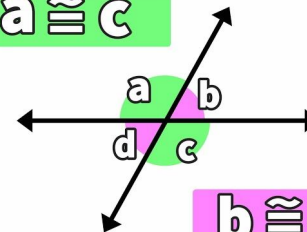
Angles 1 and 2 are supplementary angles. They have a sum of  $180^\circ$ .

Acute angle:	Obtuse angle:	Right angle:	Straight angle:
less than $90^\circ$ and greater than $0^\circ$	less than $180^\circ$ and greater than $90^\circ$	equal to $90^\circ$	equal to $180^\circ$

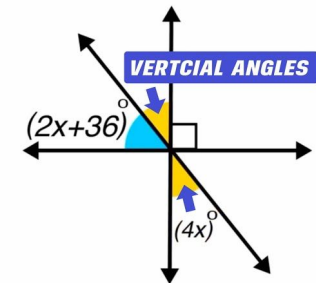


# Vertical Angles

$$a \cong c$$



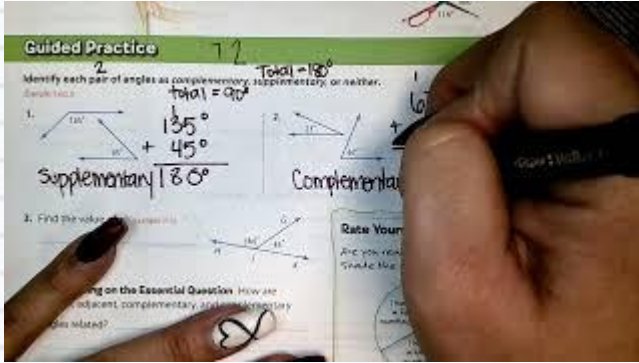
$$b \cong d$$



# Ch. 7 Lesson : 2

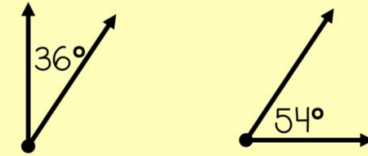
## Complementary and Supplementary Angles

Check out a video here!



## COMPLEMENTARY & SUPPLEMENTARY ANGLES

Complementary Angles: Two angles that add to equal  $90^\circ$



Supplementary Angles: Two angles that add to equal  $180^\circ$



Lindsay Bowden

### Complementary Angles

**Complementary angles** are two angles that add up to 90 degrees. They can be adjacent or not adjacent.

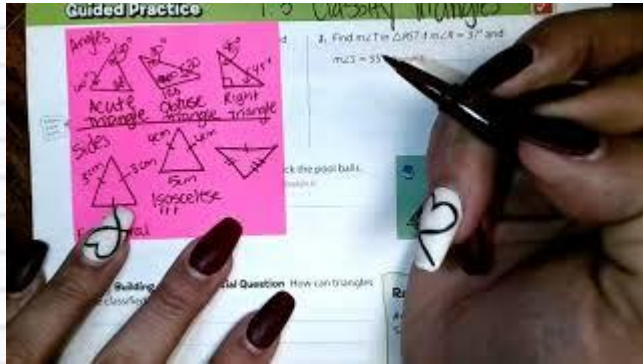
Example

Adjacent complementary angles	Non-adjacent complementary angles

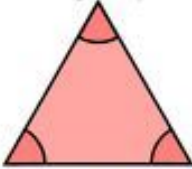
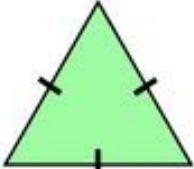
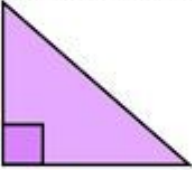
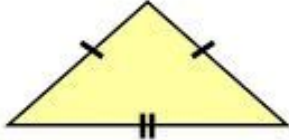
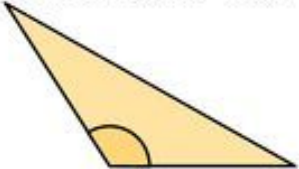
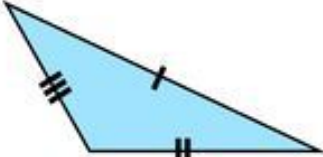
# Ch. 7 Lesson : 3

## Classify Triangles

Check out a video here!



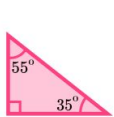
## TYPES OF TRIANGLES

by angles:	by sides:
<b>acute</b> A triangle with three acute angles ( $< 90^\circ$ ). 	<b>equilateral</b> A triangle with three equal length sides. 
<b>right</b> A triangle with one right angle (exactly $90^\circ$ ). 	<b>isosceles</b> A triangle with two equal length sides. 
<b>obtuse</b> A triangle with one obtuse angle ( $> 90^\circ$ ). 	<b>scalene</b> A triangle with all different length sides. 

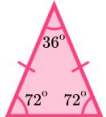
### Angles in a Triangle

Angles in a triangle refers to the sum (total) of the angles at each vertex in a triangle. The sum of the interior angles of a triangle is  $180^\circ$ .

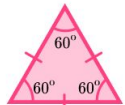
E.g.



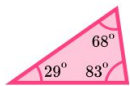
**Right angled triangle**  
 One right angle  
 $90 + 55 + 35 = 180^\circ$



**Isosceles triangle**  
 Two equal sides & angles  
 $72 + 72 + 36 = 180^\circ$



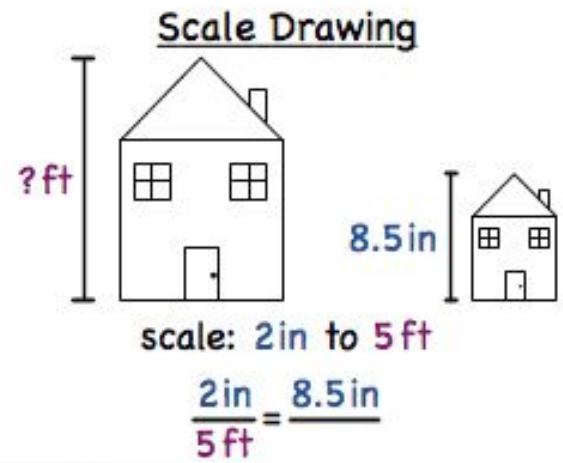
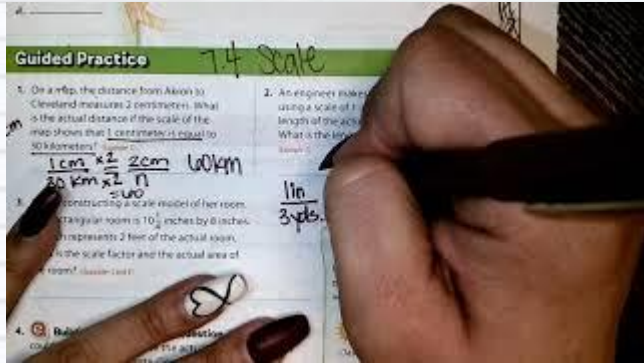
**Equilateral triangle**  
 Three equal sides & angles  
 $60 + 60 + 60 = 180^\circ$



**Scalene triangle**  
 All sides & angles different  
 $83 + 68 + 29 = 180^\circ$

# Ch. 7 Lesson : 4 Scale

Check out a video here!



Scale= 1:5



Real Giraffe  
150 inches high



Drawn Giraffe  
30 inches high

# Ch. 7 Lesson : 5

## Draw 3d Figures

Check out a video here!

