Name:_____ **Algebra I** **Week 3 assignment**

Exponential Growth and Decay

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Exponential Growth and Decay Formula:

Initial Starting Value — # of times it grows or decays

$$y = ab^x$$

Growth/Decay Factor

Exponential Growth Example 1 Don't forget to change the percent to a decimal

The population in New York was 19,440,469 and it increases at a rate of 9%

Initial Value: 19,440,469

Exponential Factor: 9% = .09 = 1 + .09 **(because we have a growth function we add 1)** = 1.09

Equation: $19,440,469(1.09)^x$

Exponential Decay Example 2

Michelle recently purchased a new car for $24,000. The car she bought is expected to decrease in value 5.4% each year.

Initial Value: 24,000

Exponential Factor: 5.4% = .054 = 1 – .054 **(because we have a decaying function we subtract 1)** = .946

Equation: $24,000(.946)^x$

1. A bank account balance if the account starts with $100, has an annual decreasing rate of 4%.

Initial Value:

Exponential Factor:

Equation:

2. In 1985, there were 285 cell phone subscribers in the small town of Centerville. The number of subscribers increased by 75%.

Initial Value:

Exponential Factor:

Equation:

3. . The local country club sponsors a tennis tournament. Play starts with 128 participants. During each round, half of the players are eliminated.

Initial Value:

Exponential Factor:

Equation:

4. A new car costs $22,000. It is expected to depreciate 12% each year.

Initial Value:

Exponential Factor:

Equation:

5. You have inherited land that was purchased for $30,000 in 1960. The value of the land increased by 5% per year.

Initial Value:

Exponential Factor:

Equation:

6. An adult takes 400 mg of ibuprofen. The amount of ibuprofen in the person's system decreases by about 15%.

Initial Value:

Exponential Factor:

Equation:

7. You deposit $1600 in a bank account. The account pays 2.5% annual interest compounded monthly.

Initial Value:

Exponential Factor:

Equation:

8. You buy a new computer for $2100. The computer decreases by 50% annually.

Initial Value:

Exponential Factor:

Equation:

9. . You drink a beverage with 120 mg of caffeine. Each hour, the caffeine in your system decreases by about 12%.

Initial Value:

Exponential Factor:

Equation:

10. The foundation of a house has 1,200 termites. The termites grow at a rate of 2.4% per day.

Initial Value:

Exponential Factor:

Equation:

Geometry

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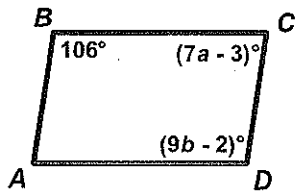
Rhombuses, Rectangles, and Squares

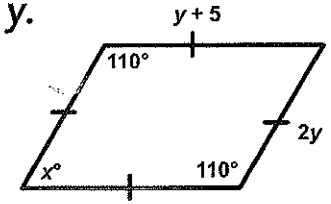
1

ABCD is a parallelogram. Find *a* and *b*.



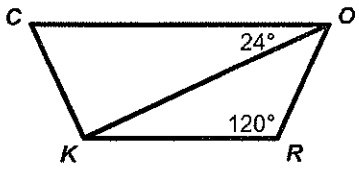
2

Classify the quadrilateral. Then, find *x* and *y*.



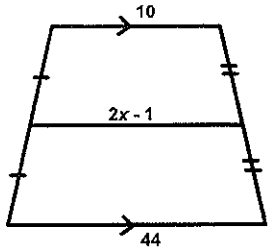
3

Trapezoid *ROCK* is isosceles. Find $m\angle ROK$, $m\angle CKO$, and $m\angle C$.



4

Classify the quadrilateral. Then, find *x*.



Sometimes, always, or never true?

A rhombus is _____ a rectangle.

A parallelogram is _____ a rectangle.

A rectangle is _____ a square.

A square is _____ a rhombus.

If ABCD is a square, what else do you know about it?

Diagonals of Parallelograms	Rhom	Rect.	Squ.
Diagonals are perpendicular.			
Diagonals bisect each other.			
Diagonals are congruent.			
Each diagonal bisects a pair of opposite angles.			

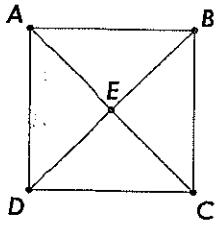
Classify parallelogram *ABCD* if:

1) $\overline{AC} \perp \overline{BD}$

2) $AE = BE = CE = DE$

3) $\angle BAD$ is a right angle.

4) $\overline{AC} \cong \overline{BD}$ and $\overline{AC} \perp \overline{BD}$



A **rhombus** is a parallelogram with four congruent sides.

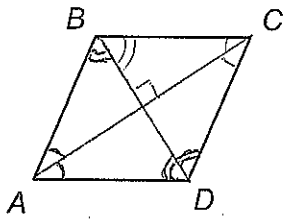
- The diagonals of a rhombus are perpendicular.
- The diagonals of a rhombus bisect a pair of opposite angles.

Note:

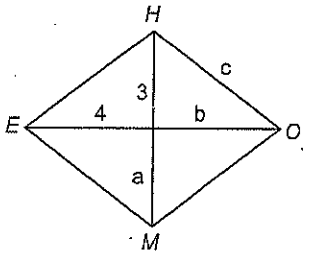
$\angle A \cong \angle C$

$\angle B \cong \angle D$

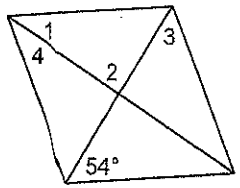
$\overline{AC} \perp \overline{BD}$



values of a, b, and c.



numbered angles in the rhombus.

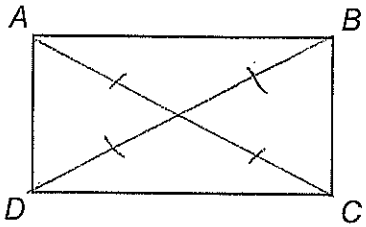


A **rectangle** is a parallelogram with four congruent, right angles.

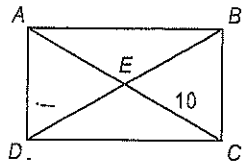
- The diagonals of a rectangle are congruent.

Note:

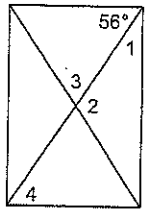
- $\angle A, \angle B, \angle C, \& \angle D$ are right $\angle$'s
- $\overline{AC}$ bisects $\overline{BD}$
- $\overline{AC} \cong \overline{BD}$



ABCD is a rectangle. Find *AC*.

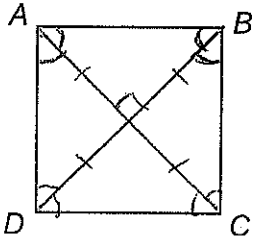


Find the measures of the numbered angles in the rectangle.

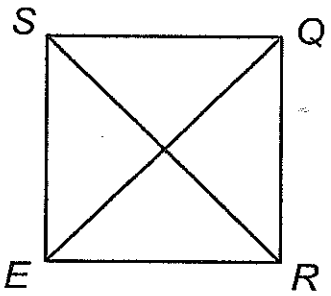


A **square** is a parallelogram with four congruent sides and four right angles.

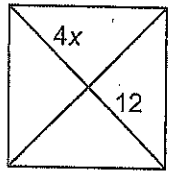
- A square is both a rhombus and a square.
- The diagonals of a square are perpendicular.
- The diagonals of a square bisect a pair of opposite angles.
- The diagonals of a square are congruent.



Find the measures of all of the angles.



Find the value of x in the square.

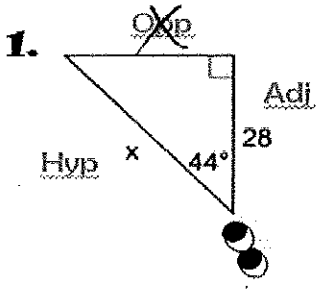


MATH MODELS : WEEK 3

Notes: Use Trig Functions to find missing sides

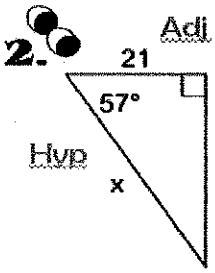
1. Label the sides: H, O, A
2. Mark out the side that has nothing.
3. Choose your trig function.
4. Build your fraction.
5. If x is on the top, multiply.
   If x is on bottom, divide.

1.



$$\cos 44 = \frac{28}{x}$$
$$x = \frac{28}{\cos 44}$$
$$x = 39$$

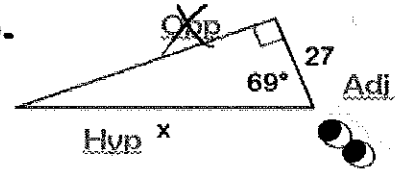
2.



Opp

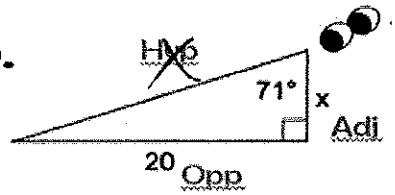
$$\cos 57 = \frac{21}{x}$$
$$x = \frac{21}{\cos 57}$$
$$x = 39$$

3.



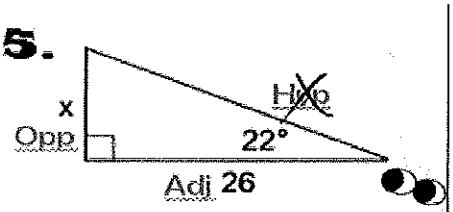
$$\cos 69 = \frac{27}{x}$$
$$x = \frac{27}{\cos 69}$$
$$x = 75$$

4.



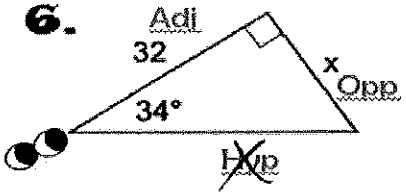
$$\tan 71 = \frac{20}{x}$$
$$x = \frac{20}{\tan 71}$$
$$x = 6.9$$

5.



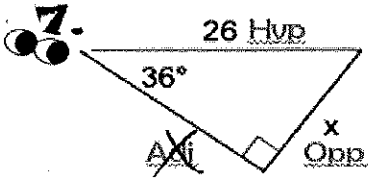
$$\tan 22 = \frac{x}{26}$$
$$26 * tan22 = x$$
$$10.5 = x$$

6.



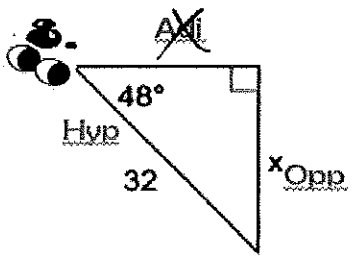
$$\tan 34 = \frac{x}{32}$$
$$32 * tan34 = x$$
$$21.5 = x$$

7.



$$\sin 36 = \frac{x}{26}$$
$$26 * sin36 = x$$
$$15.2 = x$$

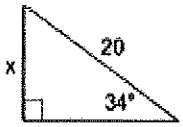
8.

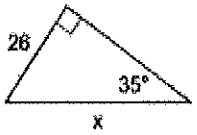


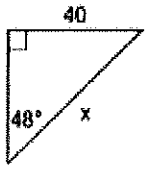
$$\sin 48 = \frac{x}{32}$$
$$32 * sin48 = x$$
$$24 = x$$

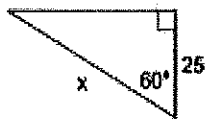
Using Trig Functions to Find Missing Sides

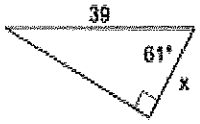
Find the missing side. Round to **one** decimal place.

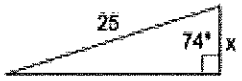
1) 

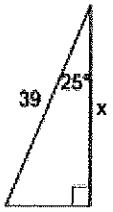
2) 

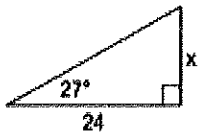
3) 

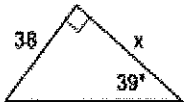
4) 

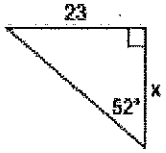
5) 

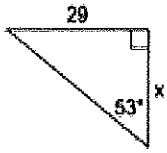
6) 

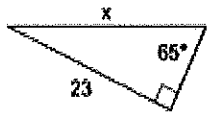
7) 

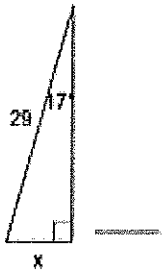
8) 

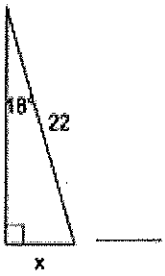
9) 

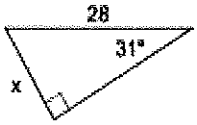
10) 

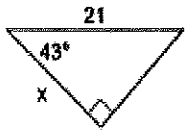
11) 

12) 

13) 

14) 

15) 

16) 

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Coach Woods REMIND code: @woodsmmod

Mr. Morris email: cmorris@mpisd.net

Algebra 2

Adding & Subtracting Complex Numbers

When adding/subtracting complex numbers you add/subtract like terms.

You can watch a lesson over this topic at this website:
https://www.khanacademy.org/math/algebra2/x2ec2f6f830c9fb89:complex#x2ec2f6f830c9fb89:complex-add-sub

combine terms with i

* remember * $\sqrt{-1} = i$

Examples:

1. $(4 + 6i) + (1 - 3i)$

$5 + 3i$

2. $(7 + \sqrt{-4}) + (5 + 3i)$

$2i$

$12 + 5i$

3. $(5 - 4i) + (6 + 2i)$

$-1 - 2i$

4. $(6 - 11i) + (6 + 4i)$

$-7i$

5. $(5i + 4) + (10 + 8i)$

$14 - 3i$

6. $(-6 + \sqrt{-4}) + (5 + 2\sqrt{-4})$

$2i$ $+4i$ $+2 \cdot 2i$

$-1 + 6i$

Name: _____

Adding & Subtracting Complex Numbers Homework

1. $(2 + 3i) + (4 + 2i)$

2. $(16 + 9i) + (-7 + 3i)$

3. $(15 + 3i) + (12 - i)$

4. $(12 + 6i) - (6 + 3i)$

5. $(15 + 9i) - (8 + 6i)$

6. $(9 - 6i) - (11 - 6i)$

7. $(15 - 12i) - (19 - \sqrt{-9})$

Dual Credit Algebra II Mrs. Russell

Info for at Home Assignments

Week 3

Hi guys! I hope everything went well last week. All of our assignments will now be located in MyMathLab. You will need to be sure that you are checking MML, Remind, and your email (the one that you set up in MML for our communications) REGULARLY for messages for me. Please be sure that you are watching the deadlines for your assignments.

Have a great week! Stay healthy!

Mrs. Russell

AQR - Weighted Averages in Sports

#1 Quarterback Ratings

The National Football League (NFL) rates quarterbacks for statistical purposes against a fixed performance standard based on the statistical achievements of all qualifies pro passers since 1960. This system allows passing performances to be compared from one season to the next.

The following categories are used to compute the quarterback rating:

- Percent of completions per attempt **(%COMP)**
- Percent of touchdown passes per attempt **(%TD)**
- Percent of interceptions per attempt **(%INT)**
- Average yards gained per attempt **(YD)**
  (from www.nfl.com/help/quarterbackratingformula)

The following is the formula for compiling the quarterback rating **(QR):**

$$QR = \frac{25 + 10(\%COMP) + 40(\%TD) - 50(\%INT) + 50(YD)}{12}$$

1. In 2019, Ryan Tannehill of the Tennessee Titans had the highest quarterback rating in the NFL. He completed 201 passes in 286 attempts for a total of 2,742 yards, with 22 touchdowns and 6 interceptions. Find Tannehill's season quarterback rating.

Weighted Sums in Merchandising
#1 Fan Cost Index

An index is a numerical scale. Characteristics of an index can be used for the following:

- To compare variables with one another or a reference number,
- To give information about general trends, and
- To help make comparisons and judgments.

It is often calculated as a weighted sum of various factors resulting in a single summary number.

The FAN Cost Index (FCI), compiled by Team Marketing Report, tracks the cost for a family of four to attend a professional sporting event. The FCI includes the prices of 2 average-price adult tickets, 2 average-price child tickets, 4 small soft drinks, 2 small other drinks, 4 regular-size hot dogs, parking for 1 car, 2 game programs, and 2 least expensive, adult-size adjustable caps. The Average Ticket Price in the following tables represents the average cost of a ticket for each member of the family.

The FCI for each Texas team in professional baseball, basketball, and football for 2015 is shown in the following table. The Soft Drink Column includes the price of 1 drink and its size in ounces.

1. Complete the 2015 table by calculating the missing FCI values.

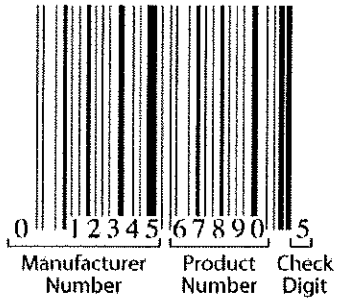
2015 Fan Cost Index

Team	Avg. Ticket Price	Soft Drink (size in oz)	Other Drink	Hot Dog	Parking	Program	Cap	FCI
Rangers	23.64	4.50 (20)	5.00	5.00	12.00	5.00	17.99	200.54
Astros	31.82	4.50 (21)	5.00	4.75	15.00	4.00	14.00	
Spurs	51.24	2.50 (24)	6.00	4.00	10.00	6.00	21.00	
Mavericks	51.80	2.75 (15)	6.00	4.00	15.00	6.00	15.00	303.20
Rockets	41.98	4.00 (22)	7.00	4.50	15.00		20.00	
Cowboys	84.12	3.50 (32)	5.00	3.50	12.00	5.00	10.00	
Texans	62.41	3.25 (21)	6.00	5.00	15.00	5.00	20.00	359.64

Weighted Sums in Check Digits
#6 Universal Product Codes

Identification numbers are present everywhere in society. Today's identification numbers are more sophisticated than those introduced years earlier (for example, Social Security numbers). Today's numbers have a check digit to partially ensure that they have been correctly scanned or entered into a computer.

Universal Product Codes(UPCs), typically in the form of barcodes, identify retail products.



The check digit in UPC number (that is, the twelfth digit) is determined in the following manner:

- Multiply the first digit by 3.
- Add the answer to the second digit.
- Multiply the third digit by 3 and add this answer to the previous total
- Add the fourth digit to the previous total
- Continue this alternating process for the digits 5 to 12

1. Show that 0-58200-48826-5 is a valid UPC number.

2. Show that 0-52200-48826-5 is an invalid UPC number. Change one digit in this invalid number so the resulting number is valid.

3. Determine the check digit (d) for the UPC number 38137009213d.

AP Statistics Mrs. Russell

Info for at Home Assignments

Week 3

Hi guys! I hope everything went well last week. I will be sending your assignments this week and all following weeks on Remind and on your email. Please be sure to check both places regularly for messages from me.

Have a great week! Stay healthy!

Mrs. Russell

Long division

Pre-Calculus Notes

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These will be challenging. Watch the videos and do your best!

https://www.khanacademy.org/math/algebra2/x2ec2f6f830c9fb89:poly-div/x2ec2f6f830c9fb89:poly-div-by-linear/v/poly-div-by-linear

Examples: #1 Give Factors, #2 Divide

1. $(x^3 + 7x^2 + 4x - 12) \div (x + 6)$

$$x+6 \overline{)\, x^3+7x^2+4x-12}$$

$$x^2 + x - 2$$

$$-x^3 \mp 6x^2 \downarrow \downarrow$$

$$x^2 + 4x - 12$$

$$-x^2 \mp 6x \downarrow$$

$$-2x - 12$$

$$+(+2x + 12)$$

$$0$$

$(x+6)(x^2+x-2)$ Factor this

$(x+6)(x+2)(x-1)$

2. $(-3x^3 + x^2 + 4x - 66) \div (x - 5)$

$$x-5 \overline{)\, -3x^3+x^2+4x-66}$$

$$-3x^2 - 14x - 66$$

$$-3x^3 \mp 15x^2 \downarrow \downarrow$$

$$-14x^2 + 4x - 66$$

$$-14x^2 \mp 70x \downarrow$$

$$-66x - 66$$

$$-66x \mp 330$$

$$-396 \text{ Remainder}$$

$-3x^2 - 14x - 66 - \frac{396}{x-5}$; $x \neq 5$ b/c bottom would be ZERO

Pre-Calculus Assignment: Try these on your own using long division.

1. $(x^3 + 2x^2 - 23x - 60) \div (x + 4)$

2. $(x^4 - x^3 + 3x^2 - 6x - 6) \div (x - 2)$

Give Factors

Divide

Dual Credit Pre Calculus

Hello guys!!! I hope your assignments are going better now. We are mostly all signed up and working on My Math Lab. We only have 2 people who are not, and those 2 are receiving zeros that will count. Please continue working on your assignments.

How Do I Get Started Now That Dual Credit Is Online???

Since you are seeing this page, you have successfully logged in to your Blackboard. Please follow the steps below to set up MyMathLab for your assignments.

1. I suggest you print these instructions out so that you can see them because when you do step 2, you will not be able to see them.

2. Click on the MyMathLab link in the upper left corner of this page.

3. You will need to create an account for MyMathLab when you are prompted to do so. Be sure to use your NTCC email address (which means that you need it set up to receive notifications on your phone from NTCC email).

4. When prompted, you will need to enter the access code below.

TBAPPF-CLONK-STOOD-GILET-STAIR-GENES

5. When these steps are completed, you should be able to see our course. There are homework assignments and quizzes that you will need to complete. Be sure to watch the videos because they count as one of the problems in the assignment. If you don't watch the video, you cannot receive credit for that problem.

How Do I Know What To Do For Homework???

Now that you have your MyMathLab set up, you will begin working on your assignments using it. You need to watch your emails that Mrs. Jenkins will send you through MML. Those emails will come to you using the email address that you used to set up MML. They will say "Professor Jenkins via Pearson Education." Make sure that you have that marked as safe so that it doesn't go to your junk mail. In addition, the emails that I send to the class will also show up on the announcements in MML. Be sure that you watch these carefully because I will try to help you make sure that you are keeping up with your assignments.

However, there is also the calendar that is located at the top of your MML screen that shows you when assignments are due (just click on the dot on the date and it will show you what is due) You will have assignments to work on almost every day, just like when we were at school.

Your first assignments are available now so that you can start to try to become familiar with the system. They will begin to be due soon. There may be several assignments due in one day, but they don't have that many questions per assignment.