**Name:**_____ **Algebra I** **Week 4 assignment**

**Exponential Growth and Decay**


Ms. Deciga
adecigasanchez@mpisd.net
Ms. Ramirez
nramirez@mpisd.net
Mrs. Orona rorona@mpisd.net
Mr. Gonzalez
rgonzalez@mpisd.net


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 town with a population of 5,000 grows 3% per year.

**Initial Value:**

**Exponential Factor:**

**Equation:**

2. Amy makes an initial investment of $5000. The investment loses 13.5% each year.

**Initial Value:**

**Exponential Factor:**

**Equation:**

3. . You deposit $1000 in a college fund that pays 7.2% interest compounded annually.

**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.** The population of Boomtown is 475,000 and is increasing at a rate of 3.75% each year.

**Initial Value:**

**Exponential Factor:**

**Equation:**

**6.** . The 1989 population of Mexico was estimated at 87,000,000. The annual growth rate is 2.4%.

**Initial Value:**

**Exponential Factor:**

**Equation:**

**7.** A radioactive element decays at a rate of 5% annually. There are 40 grams of the substance present.

**Initial Value:**

**Exponential Factor:**

**Equation:**

**8.** The population of Smalltown in the year 1890 was 6,250. Since then, it has increased at a rate of 3.75% each year.

**Initial Value:**

**Exponential Factor:**

**Equation:**

**9.** . The number of bacteria in a colony doubles every 450 minutes and there is currently a population of 500,000 bacteria.

**Initial Value:**

**Exponential Factor:**

**Equation:**

**10.** Jenna has $40 in a savings account. The interest rate is 10%, compounded annually.

**Initial Value:**

**Exponential Factor:**

**Equation:**

Ms. Little

## PRACTICE • Place Value: Decimals

Find the place and the value of the underlined digit.

1. 56.2 _____
2. 39.65 _____
3. 9.07 _____
4. 2.867 _____
5. 8.933 _____
6. 23.003 _____
7. 4.97525 _____
8. 2.06736 _____
9. 44.9003 _____
10. 1.637482 _____
11. 0.278674 _____
12. 3.232453 _____

Write the word name.

13. 0.4 _____
14. 0.006 _____
15. 3.98 _____
16. 0.386 _____
17. 0.4862 _____
18. 6.3002 _____

Write the number.

19. 5 and 24 hundredths _____
20. 4 and sixty hundredths _____
21. 579 thousandths _____
22. 89 thousandths _____
23. 9 and 4 thousandths _____
24. 4,867 ten-thousandths _____
25. 39 and 21 ten-thousandths _____
26. 863 hundred-thousandths _____
27. 2,096 hundred millionths _____
28. 3 and 7 billionths _____
29. two and two thousand ten-thousandths _____
30. fourteen and seven millionths _____

Solve.

31. When the exercise bicycle was new, its mileage was one hundredth. Write this number. _____
32. Terry's exercise bicycle should be oiled every 2,500 mi. Its odometer reads: 2 5 0 . 0. Is it time to oil the bicycle? _____

# Geometry

crussell@mpisd.net
dwoods@mpisd.net
ohernandez@mpisd.net
hcampbell@mpisd.net

## Formulas

Prisms / Cylinders

$SA = 2B + Ph$

$V = Bh$

Pyramids / Cones

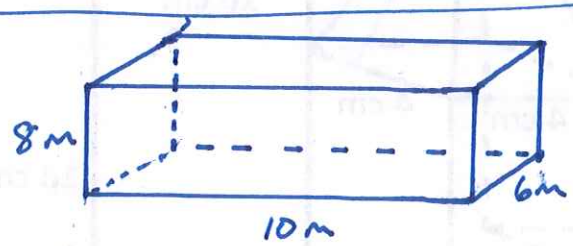
$SA = B + \frac{1}{2}Pl$

$V = \frac{1}{3}Bh$

* $B$ = area of the base
* $l$ = slant height
* $h$ = height
* $P$ = Perimeter of base

---

Ex:




$SA = 2B + Ph$

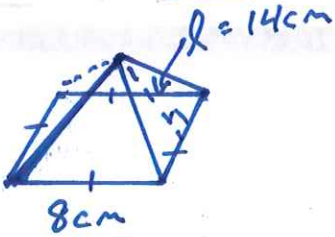
$SA = 2(6 \times 10) + 32(8)$

$SA = 2(60) + 256$

$SA = 120 + 256$

$\boxed{SA = 376\ m^2}$

Ex:

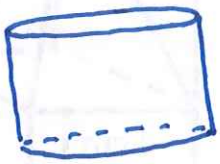



$SA = B + \frac{1}{2}Pl$

$SA = (8)^2 + \frac{1}{2}(32)(14)$

$SA = 64 + 224 = \boxed{288\ cm^2}$

Ex:



r = 10 m
h = 15 m

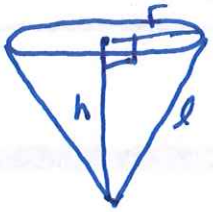
$V = Bh$

$V = \pi r^2 h$

$V = \pi (10)^2 (15)$

$\boxed{V = 1500\pi\ m^3}$

Ex:




r = 8 m
l = 14 m

$r^2 + h^2 = l^2$

$8^2 + h^2 = 14^2$

$-8^2 \quad -8^2$

$\sqrt{h^2} = \sqrt{132}$

$h = 11.49$

$V = \frac{1}{3}Bh$

$V = \frac{1}{3}\pi r^2 h$

$V = \frac{1}{3}\pi (8)^2 (11.49)$

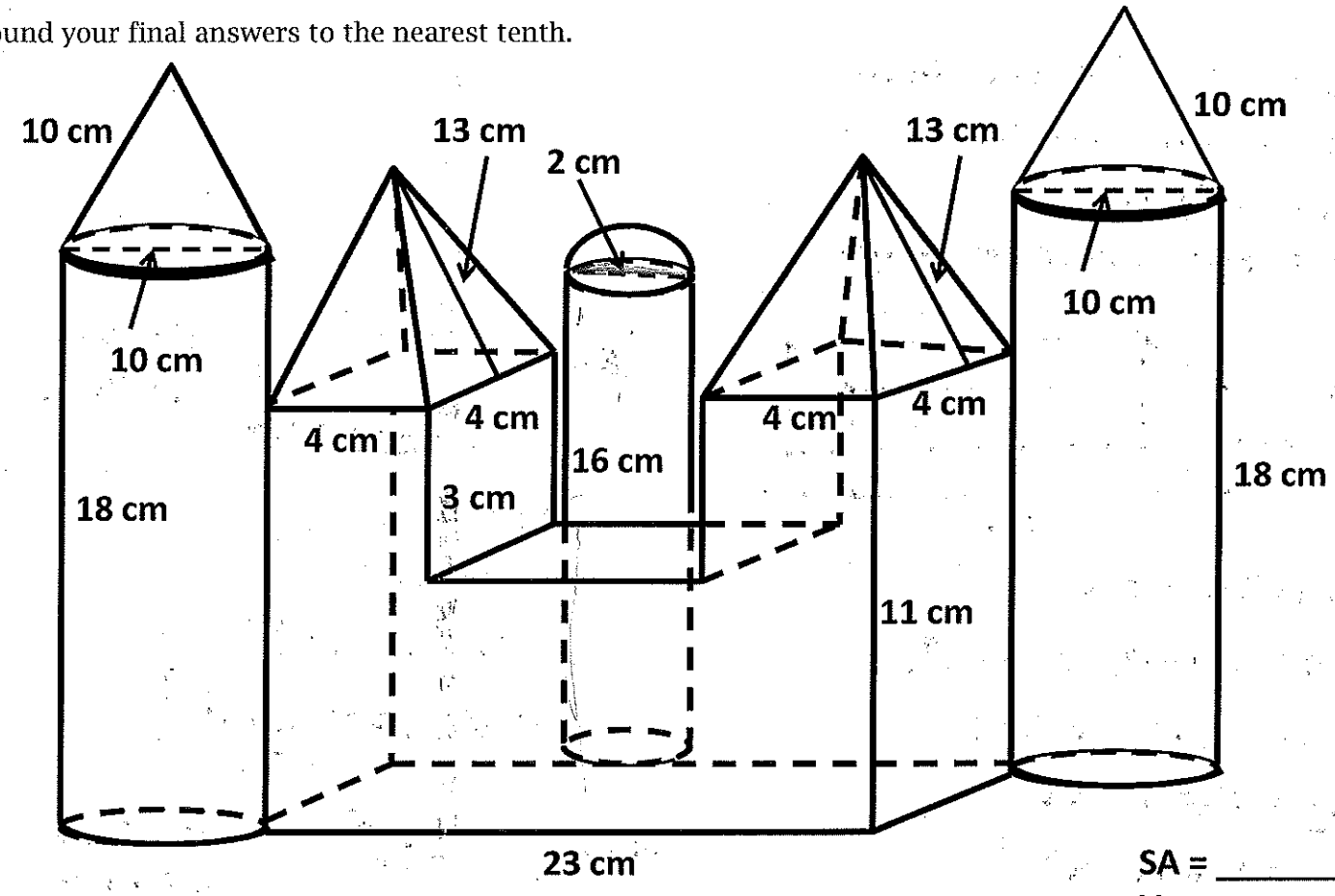
$\boxed{V = 245.12\pi\ m^2}$

Geometry Assignment

Name(s): _____

# Surface Area and Volume of a Castle

**Directions:** Find the surface area and volume of the figure below. Show all of your work, use 3.14 for π and round your final answers to the nearest tenth.




SA = _____

V = _____

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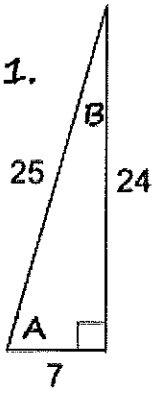
# MATH MODELS WEEK 4
## Trig Review

Coach Woods email: dwoods@mpisd.net
Coach Woods REMIND code: @woodsmmod
Mr. Morris email: cmorris@mpisd.net

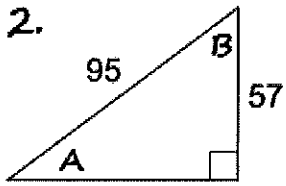
Fill in the charts below for the following triangles:

1.




| | Angle A | Angle B |
|---|---|---|
| Sin | | |
| Cos | | |
| Tan | | |
| | ° | ° |

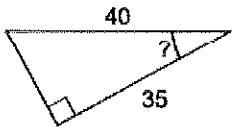
2.




| | Angle A | Angle B |
|---|---|---|
| Sin | | |
| Cos | | |
| Tan | | |
| | ° | ° |

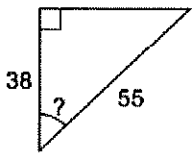
Find the measure of the missing angle:

3)




_____

4)

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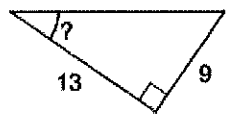
5)

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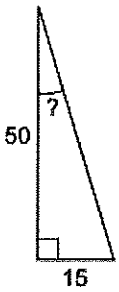
6)

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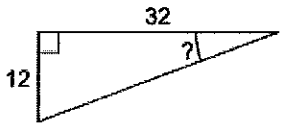
7)

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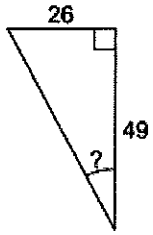
8)

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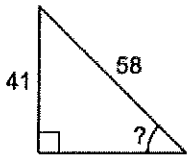
9)

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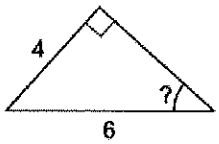
10)

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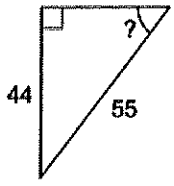
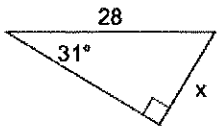
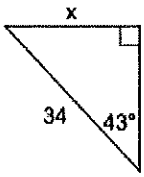
11)

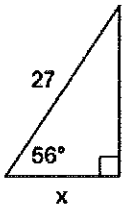


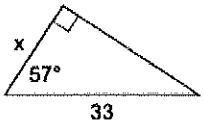

_____

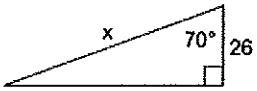
Find the measure of the missing side:

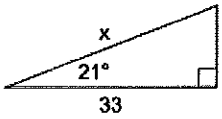
12) 

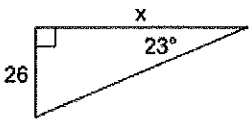

13) 

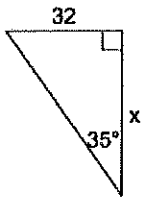

14) 

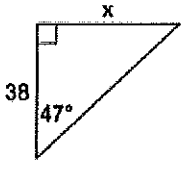

15) 


16) 


17) 


18) 


19) 


20) 

## Algebra 2 – NOTES


Berend cberend@mpisd.net

Rolf trolf@mpisd.net

Blackstone jblackstone@mpisd.net

Campbell hcampbell@mpisd.net


**Topic: Completing the Square**

Watch the videos and do your best!
https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:quadratic-functions-equations/x2f8bb11595b61c86:completing-square-quadratics/v/solving-quadratic-equations-by-completing-the-square

Steps

1. Move the constant to the other side using opposites
2. Complete the square (take ½ the middle term, square it, and add to BOTH sides of equation)
3. Factor the left side, add the right side
4. Take the square root of both sides to solve

Examples:

1. $x^2 + 2x - 15 = 0$ +15

Step 1

$x^2 + 2x + 1 = 15 + 1$

$\frac{1}{2}(2) = 1,\ 1^2 = 1$ Step 2

Add

Factor

$(x+1)(x+1) = 16$ Step 3

$(x+1)^2 = 16$

Step 4

$\sqrt{(x+1)^2} = \pm\sqrt{16}$

$x + 1 = -1 \pm 4$

$x = -1 + 4,\ -1 - 4$

$x = 3, -5$

2. $x^2 - 4x + 8 = 0$ −8

$x^2 - 4x = -8$

$\frac{1}{2}(-4) = -2$ then $(-2)^2 = 4$

$x^2 - 4x + 4 = -8 + 4$

$(x-2)(x-2) = -4$

$(x-2)^2 = -4$

$\sqrt{(x-2)^2} = \pm\sqrt{-4}$ ← Imaginary

$x - 2 = 2 \pm 2i$

$x = 2 + 2i,\ 2 - 2i$

You can't Add or subtract these b/c part is imaginary.

**Algebra 2 Assignment**

Solve these two problems by completing the square. Yes, I know there are other methods that will work. The goal of this lesson is to practice completing the square. Show all your steps.

1. $x^2 + 2x - 8 = 0$

2. $x^2 + 6x + 10 = 0$

**Dual Credit Algebra II Mrs. Russell**

**Info for at Home Assignments**

**Week 4**

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

**AP Statistics Mrs. Russell**

**Info for at Home Assignments**

**Week 4**

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

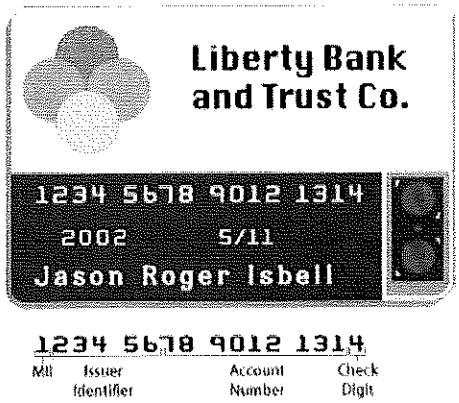
Name_____Period_____

AQR Monday, April 06, 2020

Coach Barkley – wbarkley@mpisd.net

**Weighted Sums in Check Digits**
**#1 Credit Card Numbers**

Credit cards have 16-digit numbers, of which the first 15 digits identify the credit card and the sixteenth digit is the check digit. The following figure shows the significance of the digits:




MII stands for major industry identifier; VISA cards begin with 4 and MasterCard cards with 5.

A check digit is used to help validate credit card numbers. The credit card companies use the Codabar method to determine the check digit. This method consists of the following steps:

- Add the digits in the odd-numbered positions and double this total.
- How many odd-position digits are more than 4? Add this number to the previous total.
- Add all the even-position digits. Add this total to the previous total.
- Choose a check digit that makes the final calculation total a number whose final digit is 0.

1. Show that the check digit (d) for the VISA card 4162 0012 3456 789d is 3.

2. What is the check digit (d) for the MasterCard number 5424 9813 2720 008d?

3. Show that 4128 0012 4389 0110 is an invalid VISA credit card number.

Change one digit in this invalid number so the resulting number is valid.

# Ratios in the Media

For a rectangular shape such as a display screen, the longer side is called the **width (W)** and the shorter side is the **height (H)**. The aspect ratio is **W:H or W/H.**

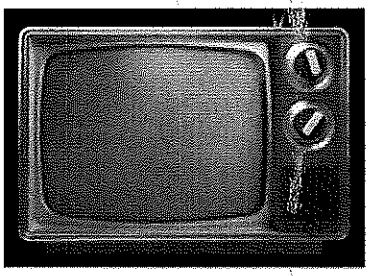
1. What is the approximate aspect ratio of the screen on your phone?

Type of phone_____ Aspect ratio_____

**Describe** the process you used to find the aspect ratio.

**Use Pythagorean Theorem to find the k value. Use the k value to find the width and the height.**

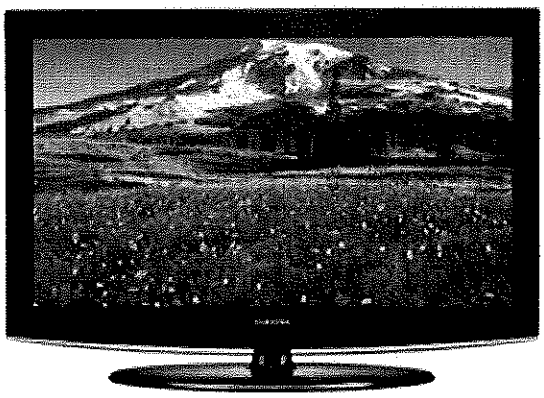
2. Below is a retro television.



Find the **width and height** of this 25-inch television whose screen has an aspect ratio of 4:3.

Find the **area** of this screen.

3. Below is a flat screen television.



Find **the width and height** of this 48-inch television whose screen has an aspect ratio of 16:9.

Find the **area** of this screen.

********** (Remember.....the size of the television is the length of the diagonal.)**********

# Pre-Calculus

J. Blackstone email: jblackstone@mpisd.net T. Rolf email: trolf@mpisd.net

**Topic:** Synthetic Division of Polynomials

**Resources:** Khan Academy "Synthetic division of Polynomials"
https://www.youtube.com/watch?v=1byR9UEQJN0

Khan Academy "Synthetic division ex. 2"
https://www.youtube.com/watch?v=3Ee_huKclEQ

EXAMPLE Use synthetic division to find the quotient and the remainder:

$(2x^3 + 7x^2 - 5) \div (x + 3)$.

First, we note that $x + 3 = x - (-3)$.

$$\begin{array}{r|cccc} -3 & 2 & 7 & 0 & -5 \\ & & -6 & -3 & 9 \\ \hline & 2 & 1 & -3 & 4 \end{array}$$

Note: You must write a 0 for the missing term, ox.

The quotient is $2x^2 + x - 3$. The remainder is 4. ▭

**Exercises:** Complete the division using Synthetic Division

1. $(2x^4 + 7x^3 + x - 12) / (x + 3)$
2. $(x^3 - 7x^2 + 13x + 3) / (x - 2)$
3. $(x^3 - 2x^2 - 8) / (x + 2)$
4. $(x^3 - 3x + 10) / (x - 2)$
5. $(3x^3 - x^2 + 4x - 10) / (x + 1)$

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.