Final Project Information

The PDF of this PowerPoint, Final Project Information video & more are on my site http://www.ramshillfarm.com/Math/Math150/Unit_6.html

a) Found under Final Project in Units 6, 7, & 8
   i. with examples
   ii. A different example in Unit 9
b) Must be in MS Word or MS PPT format.
c) 5 pages or slides
d) Select a topic in the course and discuss a potential application for this concept in your chosen profession.

Audio will start on the hour.

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them. 1

Final Project Tips

General Tips

- Start Early
- If doing a paper, remember a page is a full page.
- Submit early. If it is submitted by Unit 8, I will preview it for you, if you email me too!
- Submit it to the Writing Center. They love to read papers & presentations! (In Unit 9, they are slow)
- If you put in graphics, make sure they pertain to your information, otherwise they are considered "distracting".

Content

- MS Word or PowerPoint
- Good Videos about what not to do in PowerPoint:
  - How NOT to use PowerPoint
  - Life After Death by PowerPoint
  - What Not to Do in PowerPoint
- Keep in mind this should be a short presentation to introduce others to your profession & how it uses 1 mathematical concept.
- Remember, you will be sharing this with your classmates in Unit 10, they may not know your field or how you might be able to use your topic.

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them. 2

Recommended "Layout"

1. Provide your name, the project title, and the course and section number
2. Introduce your chosen profession and give a brief overview of the concept you will apply to the profession
3. Describe how the concept can apply to your chosen profession
4. Provide examples of situations in which you would use the concept you have chosen
   i. Pages 3 & 4 can be reorganized for a better "read"
5. Provide any resources you have used to give credit to others' ideas and information (**keep in mind you at least read the textbook!**)

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them. 3

Page 216

6.1

Points, Lines, Planes, and Angles

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them. 4

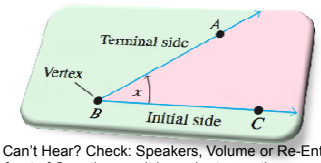
Angles

- An **angle** is the union of two rays with a common endpoint; denoted $\measuredangle, \measuredangle, or \angle$
- The **vertex** is the point common to both rays.
- The **sides** are the rays that make the angle.
- There are several ways to name an angle:

$\measuredangle B$

$\measuredangle ABC$

$\angle CBA$



Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them. 5

Angles

- The measure of an angle is the amount of rotation from its initial to its terminal side.
- Angles can be measured in **degrees**, **radians**, or **gradients**.
- Angles are classified by their degree measurement.
  - **Right Angle** is 90°
  - **Acute Angle** is less than 90°
  - **Obtuse Angle** is greater than 90° but less than 180°
  - **Straight Angle** is 180°

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them. 6

Page 222

Some Angles Types

Adjacent Angles – two angles that have a common vertex and a common side but no common interior points.

Complementary Angles - two angles whose sum of their measures is 90 degrees.

Supplementary Angles - two angles whose sum of their measures is 180 degrees.

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them. 7

Example

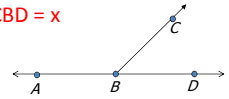
If **<ABC and <CBD** are **supplementary** and the **measure of <*ABC*** is **6 times larger than <CBD**, determine the measure of each angle.

m<ABC + m<CBD = 180° ➡ m<ABC = 180° - m<CBD

m<ABC = 6*m<CBD; Let m<CBD = x

6x + x = 180°

7x = 180°



x ≈ 25.7°

m<CBD = 25.7°

m<ABC = 180° - m<CBD

m<ABC = 180° - 25.7°

m<ABC = 154.3°

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them. 8

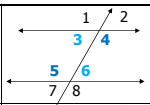
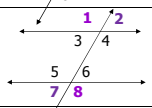
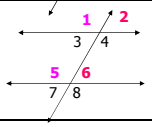
More definitions

- **Vertical angles** are the nonadjacent angles formed by two intersecting straight lines. They have the **same measure**.
- A line that intersects two different lines, at two different points is called a **transversal**.
- Special names are given to the angles formed by a transversal crossing two **parallel lines**. (next slide)

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them. 9

Special Names

Page 224

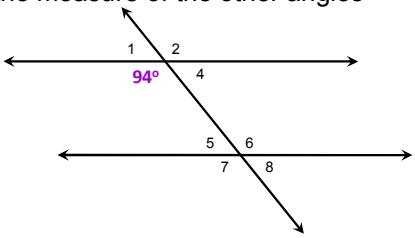
Alternate interior angles	Interior angles on the opposite side of the transversal have the same measure	
Alternate exterior angles	Exterior angles on the opposite sides of the transversal have the same measure	
Corresponding angles	One interior and one exterior angle on the same side of the transversal have the same measure	

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them.

10

Example

Find the measure of the other angles



Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them.

11

Page 229

6.2

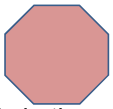
Polygons

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them.

12

Page 230

The **sum** of the measures of the interior angles of an *n*-sided polygon is $(n - 2)180^{o}$.



Example: A certain brick paver is in the shape of a **regular octagon**. Determine the **measure of an interior angle** and the **measure of one exterior angle**.

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them.
13

Determine the sum of the interior angles.

$$S = (n-2)180^{\circ}$$
$$= (8-2)(180^{\circ})$$
$$= 6(180^{\circ})$$
$$= 1080^{\circ}$$

The measure of one interior angle is

$$\frac{1080^{\circ}}{8} = 135^{\circ}$$

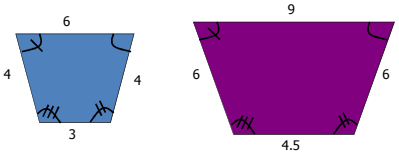
The exterior angle is supplementary to the interior angle, so

$180^{o} - 135^{o} = 45^{o}$

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them.
14

Similar Figures

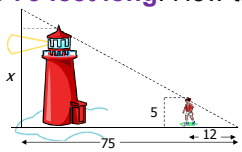
Two polygons are **similar** if their corresponding angles have the same measure and the lengths of their corresponding sides are in proportion.



Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them.
15

Example

Catherine Johnson wants to **measure the height of a lighthouse**. **Catherine is 5 feet tall** and determines that when her **shadow is 12 feet long**, the **shadow of the lighthouse is 75 feet long**. How tall is the lighthouse?



Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them. 16

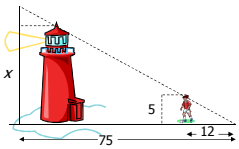
Example continued

$$\frac{\text{ht. lighthouse}}{\text{ht. Catherine}} = \frac{\text{lighthouse's shadow}}{\text{Catherine's shadow}}$$

$$\frac{x}{5} = \frac{75}{12}$$

$$12x = 375$$

$$x = 31.25$$



Therefore, the lighthouse is 31.25 feet tall.

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them. 17

Page 233

Congruent Figures

If corresponding sides of two similar figures are the same length, the figures are **congruent**.

Corresponding angles of congruent figures have **the same measure**.

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them. 18

Page 240

6.3

Perimeter and Area

Example

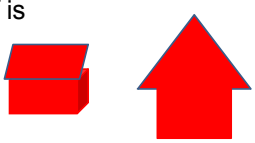
Marcus Sanderson needs to put a new roof on his barn. One square of roofing, bundle of shingles, **covers 100 ft²** and **costs $32.00 per square**. If **one side** of the barn roof measures **50 feet** by **30 feet**, determine:

a) the area of the entire roof.
b) how many squares of roofing he needs
c) the cost of putting on the roof.

one side measures 50 feet by 30 feet

a) The area of the roof is

$A = lw$
$A = 30ft*50ft$
$A = (30*50)(ft*ft)$
$A = 1500\ ft^2$



The area for each side of the roof is $1500\ ft^2$

For both sides of the roof:

$1500ft^2 \times 2 = 3000\ ft^2$

One square of roofing covers 100 ft^2
& costs $32.00 per square

b) Determine the number of squares

1 square = 100 ft^2

$$\frac{3000\ ft^2}{1} * \frac{1\ square}{100\ ft^2} = \_\_squares$$

c) Determine the cost

30 squares * $\frac{\$32}{1\ \text{square}}$ = \$960

It will cost a total of \$960 to get the roofing for the barn.

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them. 22

Page 252

6.4

Volume and Surface Area

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them. 23

Volume

Volume is the measure of the capacity of a figure.

It is the amount of material you can put ***inside*** a three-dimensional figure.

Surface Area is sum of the areas of the surfaces of a three-dimensional figure.

It refers to the total area that is on the ***outside*** surface of the figure.

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them. 24

Example

Mr. Stoller needs to order potting soil for his horticulture class. The class is going to plant seeds in rectangular planters that are 12 inches long, 8 inches wide and 3 inches deep. If the class is going to fill 500 planters, how many cubic inches of soil are needed? How many cubic feet is this?

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them. 25

Example, continued

We need to find the volume of one planter.

$V = lwh$

$V = 12(8)(3)$

$V = 288$ in.^{3}

Soil for 500 planters would be
500*(288) = 144,000 cubic inches

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them. 26

Example, continued

$$\frac{144{,}000\ in*in*in}{1}*\frac{1\ ft}{12\ in}*\frac{1\ ft}{12\ in}*\frac{1\ ft}{12\ in}$$

$$\frac{144{,}000\ \cancel{in*in*in}}{1}*\frac{1\ ft}{12\ \cancel{in}}*\frac{1\ ft}{12\ \cancel{in}}*\frac{1\ ft}{12\ \cancel{in}}$$

$$\frac{144{,}000}{1}*\frac{1\ ft}{12}*\frac{1\ ft}{12}*\frac{1\ ft}{12}$$

$$\frac{144{,}000*ft^3}{1728}$$

83.33 ft^3

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them. 27

Page 258

A prism is a figure whose opposite ends are the same polygon, call one of them the base.

$V = Bh$, where B is the area of the base, look up the correct formula, and h is the height.

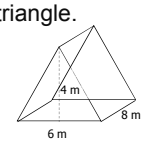
Example: Find the volume of the figure.

Area of one triangle.

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

$A = \frac{1}{2}(6)(4)$

$A = 12\ m^2$



Find the volume.

$V = Bh$

$V = 12(8)$

$V = 96\ m^3$

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them.

28

Page 261

A pyramid is a figure whose base is a polygon, and sides go to a point.

$V = \frac{1}{3}Bh$, where B is the area of the base, check the formula for the figure, and h is the height.

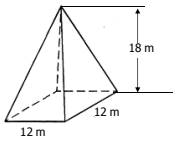
Example: Find the volume of the pyramid.

Base area = $12^2 = 144$

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

$V = \frac{1}{3}(144)(18)$

$V = 864\ m^3$



Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them.

29

Final Project Information

The PDF of this PowerPoint, Final Project Information video & more are on my site http://www.ramshillfarm.com/Math/Math150/Unit_6.html

a) Found under Final Project in Units 6, 7, & 8
   i. with examples
   ii. A different example in Unit 9
b) Must be in MS Word or MS PPT format.
c) 5 pages or slides
d) Select a topic in the course and discuss a potential application for this concept in your chosen profession.

Audio will start on the hour.

Can't Type? press F11 Can't Hear? Check: Speakers, Volume or Re-Enter Seminar
Put ? in front of Questions so it is easier to see them.

30