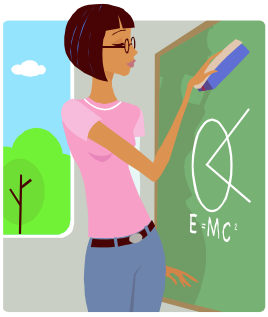
Algebra/Geometry Institute Summer 2009



Faculty Name: Vivian Wilder

School: D.M. Smith Middle School

Grade Level: 7th Grade

1 Teaching objective(s):

- The students will develop measurement concepts and formulas through the use of geometry.
- The students will solve geometric problems using formulas.

Student Objective(s):

- The students will find the perimeter and area of triangles.

2 Instructional Activities:

- Review the definitions of perimeter and area.
- Allow students to use prior knowledge to explain how to find the perimeter of triangle.
- Distribute or ask students to take out a sheet of notebook paper or typing paper. Use folding rectangle to allow students to discover the formula for finding the area of a triangle.
- Display and explain transparency (attachment 1) on how to find the perimeter and area of a triangle.
- Place students in groups of three or four students. Each group will create one original perimeter problem and area problem by drawing and labeling a triangle with measurements. The groups will write the problem and draw their triangle on poster board or chart paper. The group members should write their names and the solution on the back of the paper. The problems will be displayed around the room. The groups will float from problem to problem and calculate the areas and perimeters of each triangle.
- Distribute Attachment 2. Students will complete assessment that includes triangle measurements with the perimeters and areas.
- Students are to post today's learning experience to their math journals (Attachment 3)

3 Materials and Resources:

- Materials
  - Typing or Line Paper
  - Overhead projector
  - Tape
  - Chart Paper or Poster Boards
  - Rulers
  - Markers

- Resources:
  - Bennett, Jennie et al. *Holt Mathematics*. Holt, Rinehart, and Winston, 2007. pp 524 & 534.
  - Adapted from www.edhelper.com
  - Adapted from www.edhelperblog.com/cgi-bin/geom2.cgi

4 Assessments:

- Questioning
- Worksheet (Attachment 2)
- Math Journal Writing (Attachment 3)

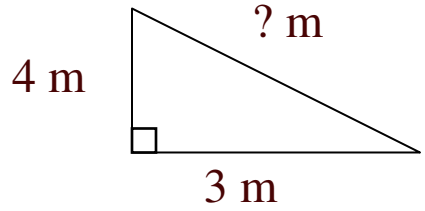
Attachment 1: Transparency

1) The **perimeter** is the distance around the outside a figure.

What is the perimeter of the triangle shown?

To find the perimeter, the lengths of the three sides must be added.

P = 3 + 4 + ?



Using the Pythagorean Theorem, the length of the hypotenuse is 5.

P = 3 + 4 + 5

P = 12 m

2) The **area** is the region or space inside a figure. Area is always measured in square units.

Formulas for Area of Triangles

Triangle: Area = $\frac{1}{2}$bh where b = base, h = height. The height is always perpendicular to the base.

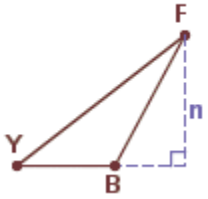
Attachment 2

Name: _____ Date: _____

Directions: Calculate the perimeter and area of each triangle. Round your answer to the nearest tenths.

1. SR = 12 in
   YR = 11.8 in
   YS = 10.3
   n = 10.8 in

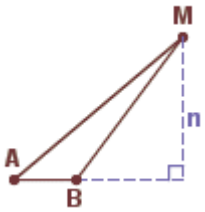
2. YF = 31.8 mm
   n = 19.5 mm
   YB = 14.7 mm
   BF = 22.2 mm



3.

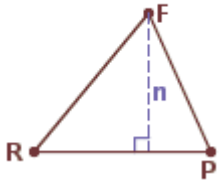
UD = 55 ½ feet
UC = 27 ¾ ft
n = 54 ft
DC = 60 ft

4.



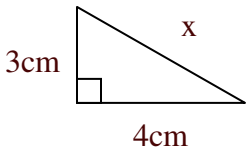
AM = 146 2/3 cm
AB = 41 1/3 cm
n = 94 2/3 cm
MB = 129 cm

5.

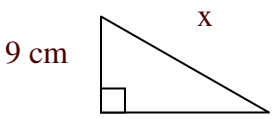


RP = 3.8 in
PF = 3.3 in
RF = 3.8 in
n = 3 in

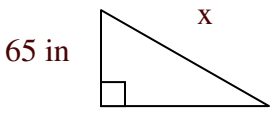
6.



7.

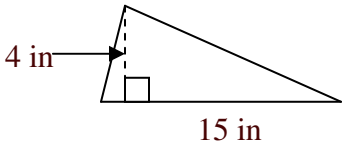


8.

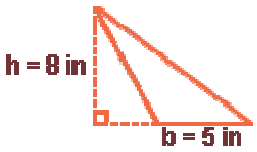


Directions: Find the area of the following triangles.

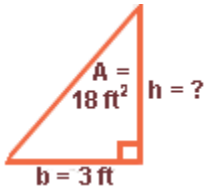
9.



10.



Bonus: Given the area and base measurement of the following triangle, calculate the measurement of its height.



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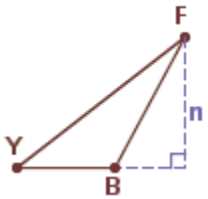
Name: Answer Key

Directions: Calculate the perimeter and area of each triangle. Round your answer to the nearest tenths.

1. SR = 12 in
   YR = 11.8 in
   YS = 10.3
   n = 10.8 in

P = 34.1 in.
A = 55.6 in.^{2}

2. YF = 31.8 mm
   n = 19.5 mm
   YB = 14.7 mm
   BF = 22.2 mm



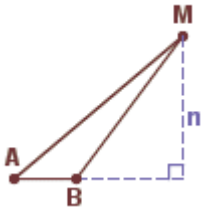
P = 68.7 mm
A = 143.3 mm.^{2}

3.

UD = 55 ½ feet
UC = 27 ¾ ft
n = 54 ft
DC = 60 ft

P = 143.3 ft.
A = 749.3 ft.^{2}

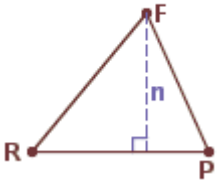
4.



AM = 146 2/3 cm
AB = 41 1/3 cm
n = 94 2/3 cm
MB = 129 cm

P = 317 cm
A = 1956.4 cm.^{2}

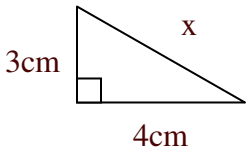
5.



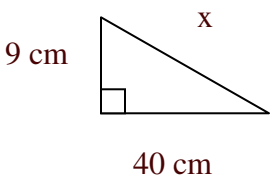
RP = 3.8 in
PF = 3.3 in
RF = 3.8 in

n = 3 in

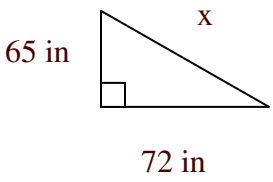
P = 10.9 in.
A = 5.7 in.^{2}

6. 

x = 5 cm
P = 12 cm
A = 6 cm.^{2}

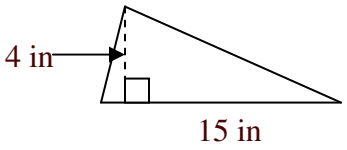
7. 

x = 41 cm
P = 90 cm
A = 180 cm.^{2}

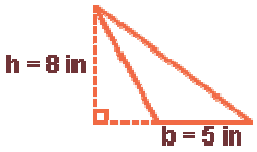
8. 

x = 97 in.
P = 234 in.
A = 2340 in.^{2}

Directions: Find the area of the following triangles.

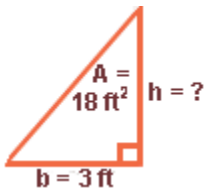
9. 

A = 30 in.^{2}

10. 

A = 20 in.^{2}

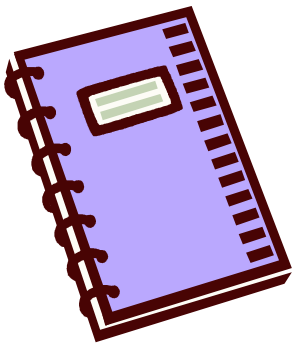
Bonus: Given the area and base measurement of the following triangle, calculate the measurement of its height.



A = ½bh
18 ft.^{2} = (0.5)(3 ft) (h)
18 ft.^{2} = 1.5 ft (h)
18 ft.^{2} = 1.5 ft (h)

1.5 ft. 1.5 ft
12 ft. = h

Attachment 3



Math Journal Entry

Name: _____ Date: _____

Topic: <u>Area and Perimeter of Triangles</u>

Address the following prompts below:

Today, I learned ….

Today, I found the following difficult for me to do…

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