HW 5-2

1. $a^2 = b^2 + c^2 - 2bc\cos A$
2. 12
3. $\frac{25}{27}$
4. 60°
5. 120°
6. 113°
7. $k = \frac{1}{2}ab\sin C$
8. 24.13

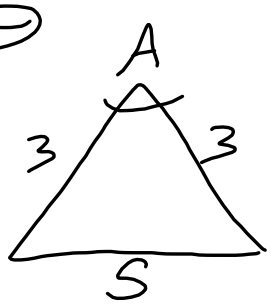
GHW#9 Due Next Wed, 12/18

Mini Quizzes Wed & Fri this week

Warmup with #1 in today's notes.

Dec 5-10:04 PM

(S=2)
(6)



$S^2 = 3^2 + 3^2 - 2(3)(3)\cos A$

$S^2 - 3^2 - 3^2 = -2(3)(3)\cos A$

$\cos A = \frac{(S^2 - 3^2 - 3^2)}{(-2(3)(3))}$

$\cos A = -\frac{7}{18}$

$\cos^{-1}\left(-\frac{7}{18}\right) = 113°$

Dec 14-7:42 AM

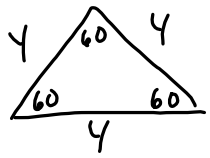
Finding the Area of a Triangle (SAS)

Area of a Triangle = $K = \frac{1}{2}ab\sin C$

$K = \frac{1}{2}ac\sin B$

$K = \frac{1}{2}bc\sin A$

1. Find the area of an equilateral triangle rounded to the nearest tenth if a side measures 4 cm.

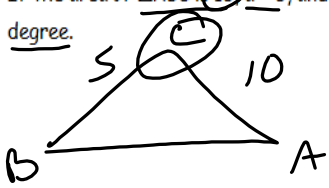


$180 \div 3 = 60°$

$K = \frac{1}{2}(4)(4)\sin 60°$

$K = 6.9\ cm^2$

2. If the area of ΔABC is 15, a = 5, and b = 10, find the acute $m\angle C$ to the nearest degree.



$K = \frac{1}{2}ab\sin C$

$15 = \frac{1}{2}(5)(10)\sin C$

$15 = 25\sin C$

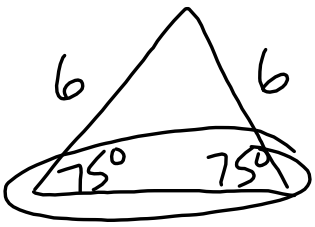
$\sin C = \frac{15}{25} = \frac{3}{5} = .6$

$m\angle C = \sin^{-1}(.6) = 36.86$

$\approx 37°$

Dec 6-9:18 PM

3. The length of each of the legs of an isosceles triangle is 6 inches and the measure of each of the base angles is 75°. Find the area of the triangle.



$180 - 150 = 30$

$K = \frac{1}{2}(6)(6)\sin 30°$

$K = 9\ in^2$

Dec 6-9:18 PM

Law of Sines

Using the Law of Sines to find a missing side or angle given **AAS** or **ASA**

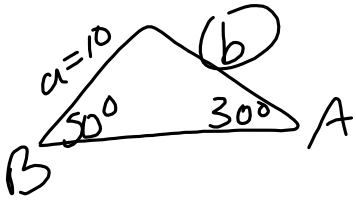
Law of Sines:

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c} \quad \text{or} \quad \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

*

For each problem, draw a diagram and solve:

1. In ΔABC, $a = 10$, $m\angle A = 30°$, and $m\angle B = 50°$. Find b to the nearest integer.



$$\frac{a}{\sin A} = \frac{b}{\sin B}$$

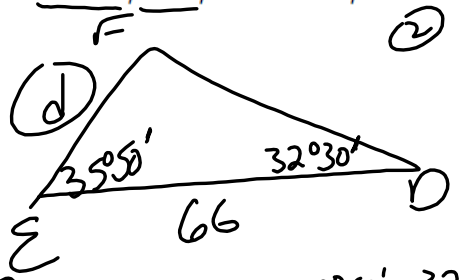
$$\frac{10}{\sin 30°} = \frac{b}{\sin 50°}$$

$$b \sin 30° = 10 \sin 50°$$

$$b = \frac{10 \sin 50°}{\sin 30°} = 15.32 \approx 15$$

Dec 6-9:19 PM

2. In ΔDEF, $f = 66$, $m\angle D = 32°30'$, $m\angle E = 35°50'$. Find d to the nearest integer.



① $m\angle F = 180 - 35°50' - 32°30'$

$= 111°40'$

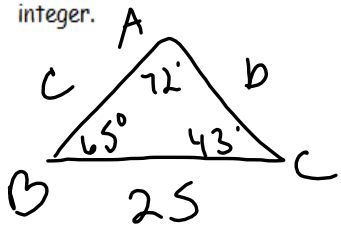
②

$$\frac{d}{\sin 32°30'} = \frac{66}{\sin 111°40'}$$

$$d = \frac{66 \sin 32°30'}{\sin 111°40'}$$

$d = 38.15 \approx 38$

3. In ΔABC, $m\angle A = 72°$, $m\angle C = 43°$, and $a = 25$. Find b and c each to the nearest integer.



① $m\angle B = 180 - 43 - 72 = 65°$

② $b =$

$$\frac{b}{\sin 65°} = \frac{25}{\sin 72°}$$

$$b = \frac{25 \sin 65°}{\sin 72°}$$

$b \approx 24$

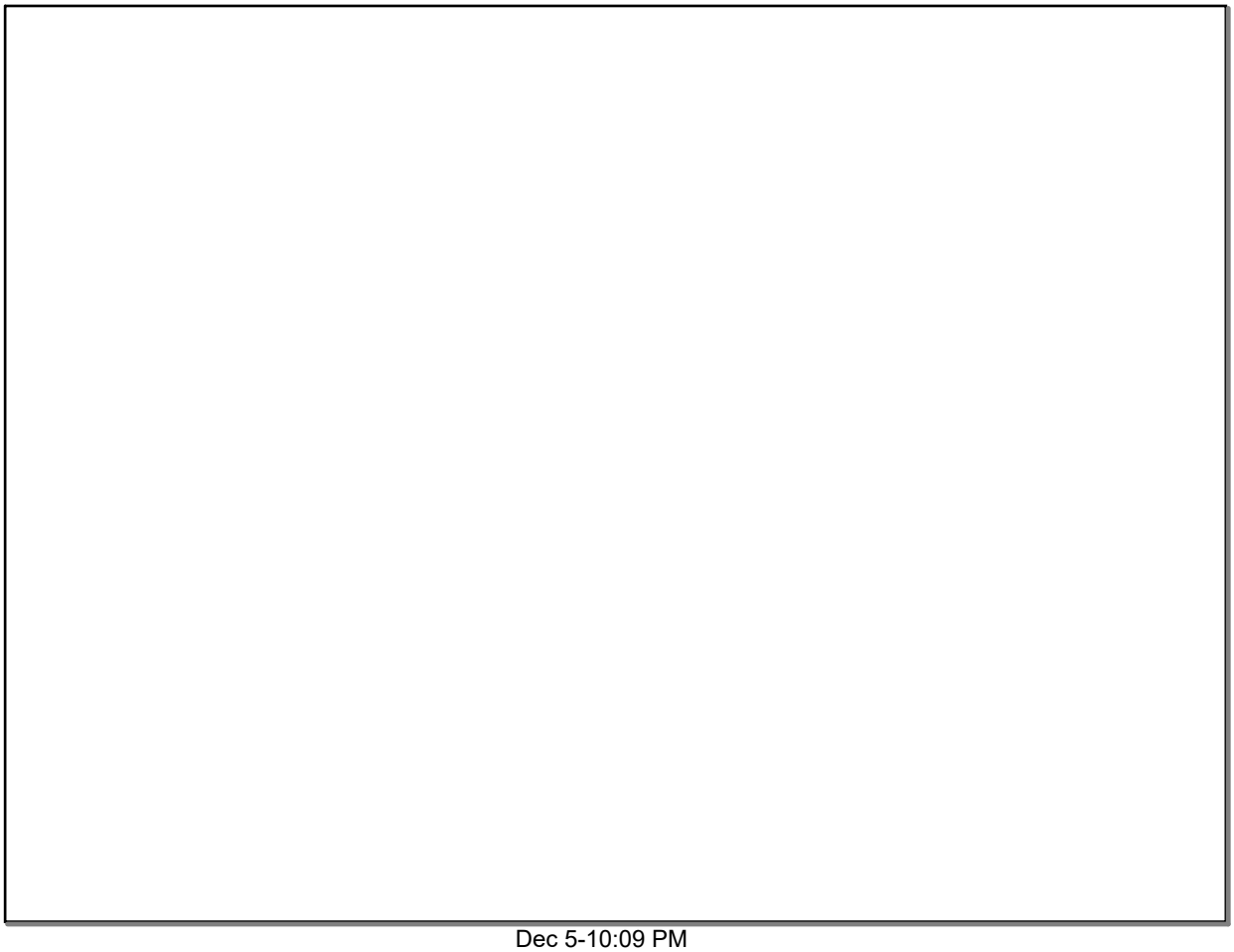
③ $c =$

$$\frac{25}{\sin 72°} = \frac{c}{\sin 43°}$$

$$c = \frac{25 \sin 43°}{\sin 72°}$$

$c \approx 18$

Dec 6-9:19 PM



Dec 5-10:09 PM