BE-Geometry | Monday 11-29-10

Find the <u>EXACT</u> value:

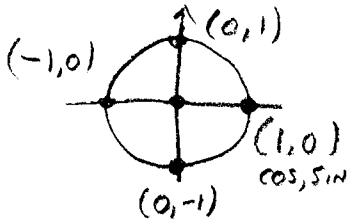
① $\sin 180^\circ$ ② $\cos 30^\circ$ ③ $\tan 135^\circ$

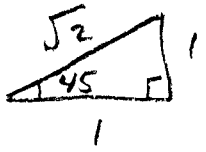
Find the <u>approximate</u> value (to Nearest <u>thousandth</u>)

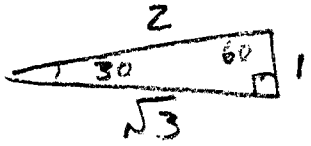
④ $\cos 35^\circ$ ⑤ $\sin 280^\circ$

Solve:

⑥ $2x^2 - 3x - 25 = -5$



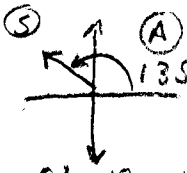




① $\sin 180^\circ = 0$

② $\cos 30^\circ = \frac{\sqrt{3}}{2}$

③ $\tan 135^\circ \Rightarrow$



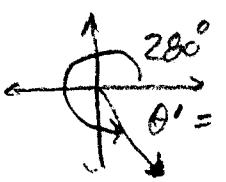
$\theta' = 180 - 135 = 45^\circ$

$\tan 45^\circ = \frac{1}{1}$

$\tan 135^\circ = -1$

④ $\cos 35^\circ = .8192 = .819$

⑤ $\sin 280^\circ \Rightarrow$



$\theta' = 360 - 280$

$\theta' = 80^\circ$

$\therefore \sin 280^\circ = -\sin 80^\circ$

$= -.9848$

$= -.985$

BE ⇒ ANSWERS

⑥ $2x^2 - 3x - 25 = -5$

$+5 \quad +5$

$2x^2 - 3x - 20 = 0$

$a = 2$

$b = -3$

$c = -20$

$b^2 - 4ac$

$(-3)^2 - 4(2)(-20)$

$9 + 160 = 169 = d$

Perfect Sq. ⇒ Factorable

Sum = −3

Prod = −40

+5 −8

$x = \frac{-b \pm \sqrt{d}}{2a} = \frac{+3 \pm \sqrt{169}}{2(2)} = \frac{+3 \pm 13}{4}$

$x = \frac{16}{4}, \frac{-10}{4} \quad \therefore \boxed{x = \left\{-\frac{5}{2}, 4\right\}}$

CK $x = -\frac{5}{2}$

$2\left(-\frac{5}{2}\right)^2 - 3\left(-\frac{5}{2}\right) - 25 \stackrel{?}{=} -5$

$2\left(\frac{25}{4}\right) + \frac{15}{2} - 25 \stackrel{?}{=} -5$

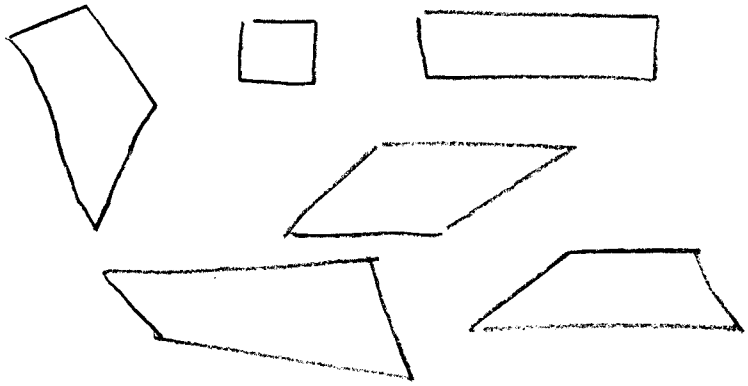
$\frac{40}{2} - \frac{50}{2} \stackrel{?}{=} -5$ ✓

CK $x = 4$

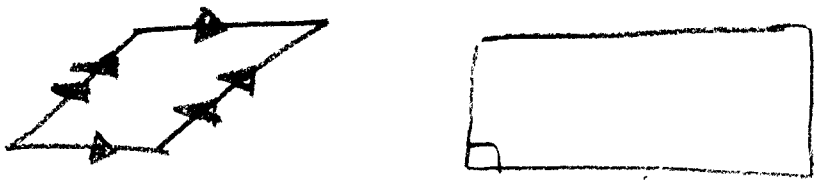
$2(4)^2 - 3(4) - 25 \stackrel{?}{=} -5$

$32 - 12 - 25 \stackrel{?}{=} -5$ ✓

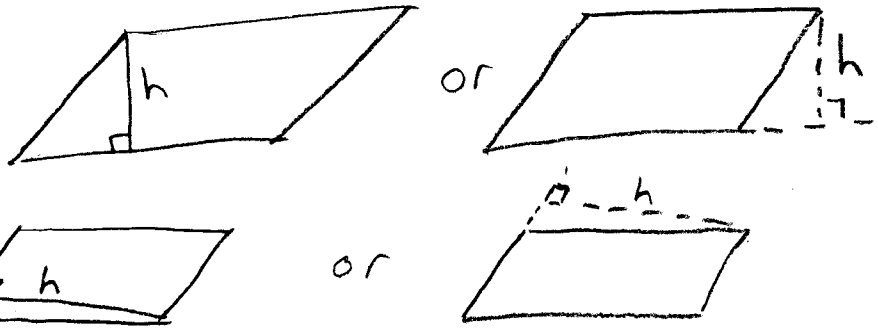
quadrilateral — A 4 sided figure



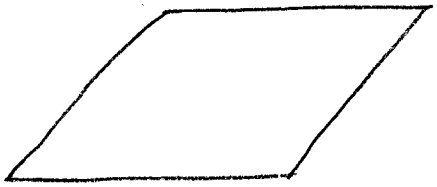
parallelogram — A quadrilateral with both pairs of opposite sides parallel.



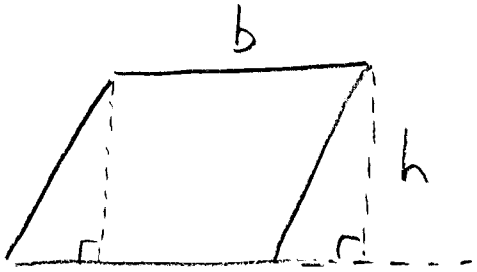
Altitude of a parallelogram — Any perpendicular line segment between a pair of parallel lines. The measure of an altitude is its <u>height.</u>

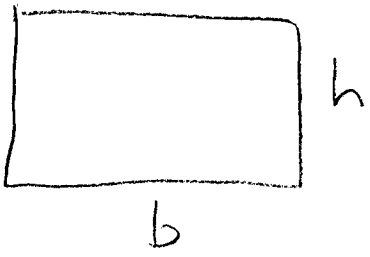


Area of a Parallelogram



Any parallelogram can be formed into an equivalent rectangle





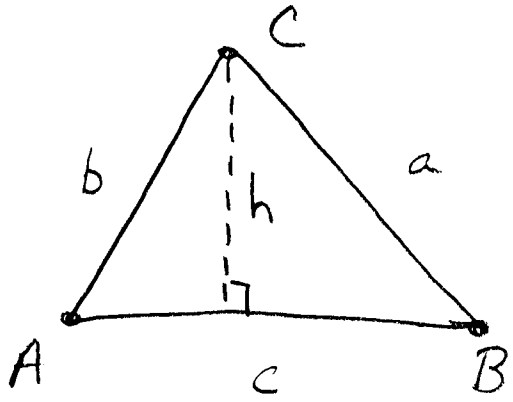
$$A_{\parallel} = bh$$

Since any $\triangle$ can be made into a parallelogram by copying it

$$A_{\triangle} = \frac{1}{2}bh$$

There is another important formula for the area of a $\triangle$ that uses a trig. function. Lets find it:

Given any $\triangle ABC$ with an altitude whose measure is h



$\sin A = ?$

$\sin A = \frac{h}{b}$

$\therefore$ $b \sin A = h$

But, Area $\triangle ABC = \frac{1}{2} c(h)$

$\therefore A_\triangle = \frac{1}{2} c(b \sin A) = \frac{1}{2} bc \sin A$

↑ product of two sides

↑ Sin of Angle between the 2 sides

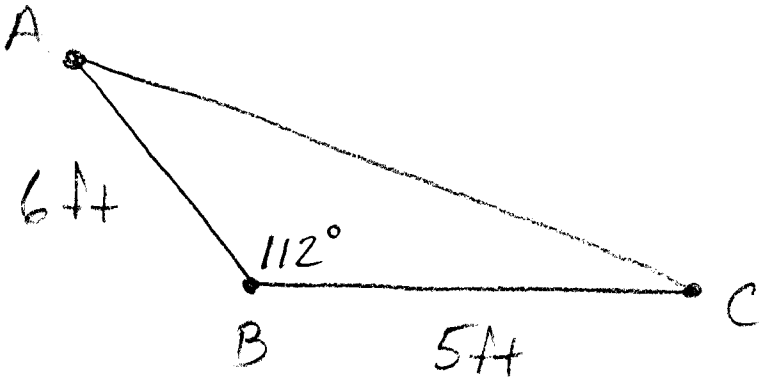
$$A_\triangle = \frac{1}{2} bc \sin A$$

$$A_\triangle = \frac{1}{2} ac \sin B$$

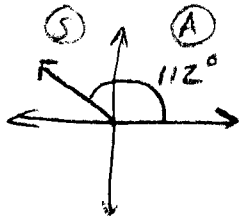
$$A_\triangle = \frac{1}{2} ab \sin C$$

} It is assumed you know this formula on the ACT

(Ex) Find Area of $\triangle ABC$ to nearest tenth



$$\text{Area } \triangle ABC = \frac{1}{2} \cdot 6 \cdot 5 \sin 112^\circ$$



$\theta = 180 - 112$
$= 68^\circ$

$$= \frac{30}{2} \cdot (\sin 68)$$

$$= 15(.9272)$$

$$\cong 13.908 = \boxed{13.9 \text{ ft}^2}$$

UNITS !!!!

Practice Problems (class).

Homework: Pg. 608 # 62-67.

Geometry 1 - Mr. C. Name Classwork

Practice Problems: Area of a Triangle Given SAS

Date 11-29-10 Period 2/6

Find the area of each figure. Round your answer to the nearest tenth.

1) A triangle with two sides that measure 3 cm and 6 cm with an included angle of 30°.

2) A triangle with two sides that measure 6 ft and 7 ft with an included angle of 41°.

3) A triangle with two sides that measure 6 ft and 6 ft with an included angle of 19°.

4) A triangle with two sides that measure 2 cm and 5 cm with an included angle of 95°.

5) A triangle with two sides that measure 5 in and 6 in with an included angle of 83°.

6) A triangle with two sides that measure 2 mi and 5 mi with an included angle of 72°.

7) A triangle with two sides that measure 4 in and 5 in with an included angle of 62°.

8) A triangle with two sides that measure 7 mi and 4 mi with an included angle of 140°.

9) A triangle with two sides that measure 4 km and 4 km with an included angle of 125°.

10) A triangle with two sides that measure 6 mi and 3 mi with an included angle of 115°.

Answers to Practice Problems: Area of a Triangle Given SAS

1) 4.5 cm^2
2) 13.8 ft^2
3) 5.9 ft^2
4) 5 cm^2
5) 14.9 in^2
6) 4.8 mi^2
7) 8.8 in^2
8) 9 mi^2
9) 6.6 km^2
10) 8.2 mi^2