

Name: \_\_\_\_\_

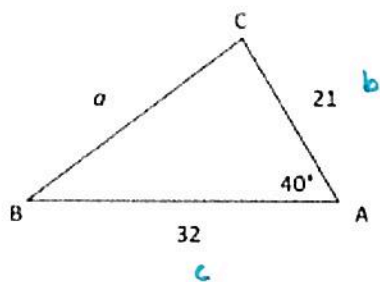
Date: \_\_\_\_\_

Period: \_\_\_\_\_

Mr. Valentino

n: How can we use the law of cosines to find angles?

Do Now: Find the missing side of  $\triangle ABC$  to the nearest hundredth.

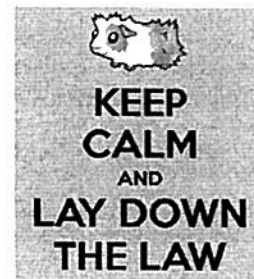


$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$a^2 = 21^2 + 32^2 - 2(21)(32) \cos 40$$

$$a^2 = 435.4362684$$

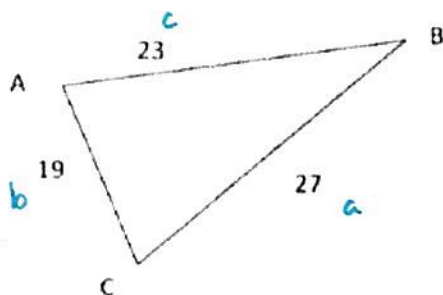
$$a = 20.87$$



OF COSINES

We can also use the law of cosines to find missing angles

1. Find the measure of  $\angle A$  to the nearest hundredth.



$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$27^2 = 19^2 + 23^2 - 2(19)(23) \cos A$$

$$729 = 361 + 529 - 874 \cos A$$

$$729 = 889 - 874 \cos A$$

$$-160 = -874 \cos A$$

$$A = 79.45$$

2. In  $\triangle ABC$ , if  $a = 4$ ,  $b = 3$  and  $c = 3$ , then the value of  $\cos(A)$  is

A.  $2/3$

B.  $1/9$

C.  $-1/9$

D.  $-2/3$

$$4^2 = 3^2 + 3^2 - 2(3)(3) \cos A$$

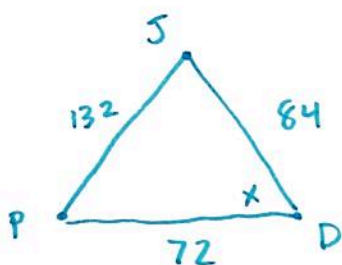
$$16 = 9 + 9 - 18 \cos A$$

$$16 = 18 - 18 \cos A$$

$$-2 = -18 \cos A$$

$$\frac{1}{9} = \cos A$$

3. Peter (P) and Jamie (J) have computer factories that are 132 miles apart. They both ship their completed computer parts to Diane (D). Diane is 72 miles from Peter and 84 miles from Jamie. Using points D, J, and P to form a triangle, find  $m\angle PDJ$  to the nearest tenth of a degree.



$$132^2 = 84^2 + 72^2 - 2(84)(72) \cos D$$

$$17424 = 12240 - 12096 \cos D$$

$$5184 = -12096 \cos D$$

$$D = 115.4^\circ$$