

6.5 Area of Oblique Triangles

Warm-Up (notecard)

For the following triangles, which law would you use?

1. $m\angle C = 115^\circ$, $a = 11$, $b = 21$; find c

2. $m\angle A = 35^\circ$, $m\angle B = 56^\circ$, $a = 51$; find c

About Me

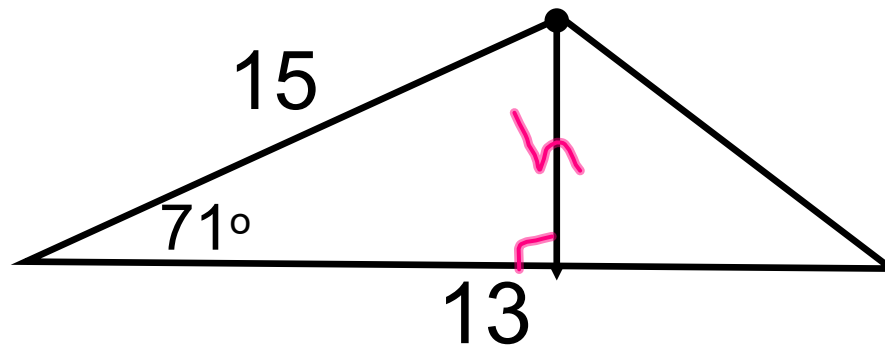
1. Would you rather have a head the size of a tennis ball or the size of a watermelon?

2. Would you rather live in a real version of the Walking Dead or Jurassic Park?

6.5 area of oblique triangles

EQ: How do I find the area of a triangle without a known base or height?

Area of Triangle: $\frac{1}{2}bh = \frac{1}{2}(13)(15\sin 71^\circ)$



$$15 \sin 71^\circ = \frac{h}{15} \cdot 15$$

6.3 AREA OF OBLIQUE TRIANGLES

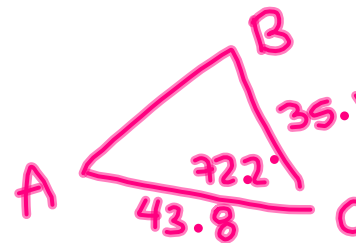
EQ: How do I find the area of a triangle without a known base or height?

For SAS:
△

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

ex. Find the area of the given triangle

$$m\angle C = 72.2^\circ, b = 43.8, a = 35.1$$



SAS

$$A = \frac{1}{2} (43.8)(35.1) \sin 72.2$$

$$A = 732 \text{ units}^2$$

NORMAL FLOAT AUTO REAL DEGREE MP
 .5*43.8*35.1sin(72.2
731.8923429

6.5 area of oblique triangles

EQ: How do I find the area of a triangle without a known base or height?

Heron's Formula

$$A = \sqrt{s(s-a)(s-b)(s-c)}$$

*for SSS Δ

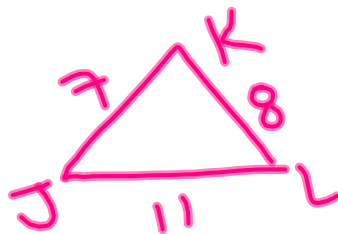
$s \rightarrow$ semi-perimeter = $\frac{a+b+c}{2}$
 ↑ half ↑ add all sides

ex. Find the area

$$j = 8$$

$$k = 11$$

$$l = 7$$



$$s = \frac{8+7+11}{2} = 13$$

$$A = \sqrt{13(13-7)(13-8)(13-11)} \\ = \boxed{27.9 \text{ units}^2}$$

ex.

NORMAL FLOAT AUTO REAL DEGREE MP a
 .5*43.8*35.1sin(72.2)
 731.8923429
 13→X
 13
 $\sqrt{X(X-7)(X-8)(X-11)}$
 27.92848009

PreCalculus Unit 6 Law of Sines and Cosines

6.5 Area of Oblique Triangles

Name _____

Find the area of the following oblique triangles to the nearest tenth. You must draw a diagram and show all work.

1. $m\angle A = 42.5^\circ$, $b = 13.6$, $c = 10.1$

2. $a = 31$, $b = 23$, $c = 14$

3. $m\angle B = 124.5^\circ$, $a = 30.4$, $c = 28.4$

4. $a = 22$, $b = 25$, $c = 30$

Front Side: Choose 6

5. $m\angle A = 56.8^\circ$, $b = 32.67$, $c = 52.89$

6. $a = 12$, $b = 12$, $c = 12$

7. $m\angle A = 24^\circ$, $m\angle B = 56^\circ$, $c = 78.4$

8. $a = 10$, $b = 24$, $c = 25$

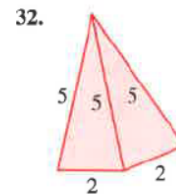
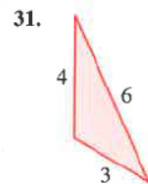
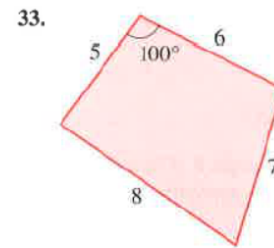
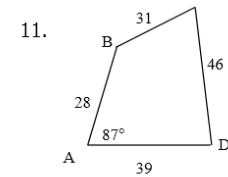
9. A painter is going to apply a special coating to a triangular metal plate. Two sides measure 16.1 m and 15.2 m. She knows that the angle between these two sides is 125° . What is the area of the surface of the plate?

PreCalculus Unit 6 Law of Sines and Cosines

10. A real estate agent wants to find the area of a triangular lot. A surveyor takes measurements and finds that two sides are 52.1 m and 21.3 m, and the angle between them is 42.2° . What is the area of the lot?

Back Side: Choose 3

Find the area of the figures to the nearest tenth of a square unit.



6.5 area of oblique triangles

EQ: How do I find the area of a triangle without a known base or height?

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