

Oblique Triangles Practice

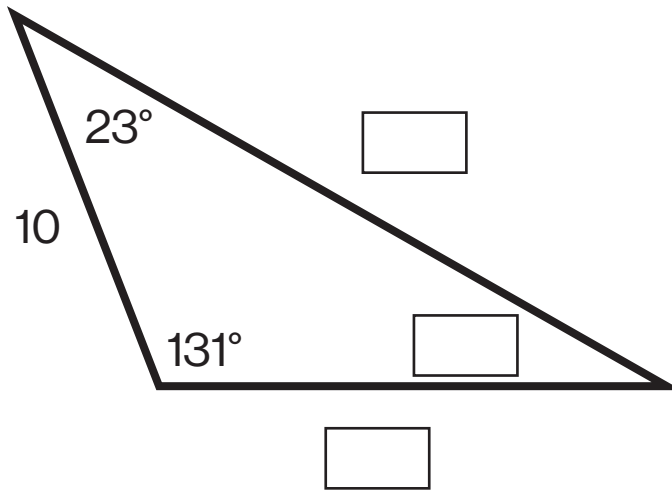
Name: _____

Date: _____

Question 1

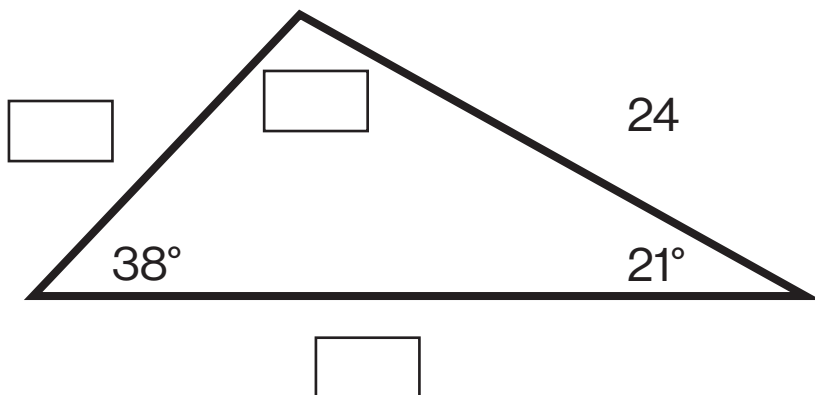
Solve the triangle (round to the nearest whole number)

I.



Oblique Triangles Practice

11.



Oblique Triangles Practice

Question 2

Solve the SSA triangle (round to the nearest tenths place)

I. $A = 43.6^\circ$ $a = 15$ $b = 28$

II. $A = 39.7^\circ$ $a = 23.5$ $b = 9.8$

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III. $A = 29^\circ$ $a = 15$ $b = 20$

Oblique Triangles Practice

Question 3

Determine the area of the triangle

I. $A = 42^\circ$ $b = 7.2$ $c = 3.4$

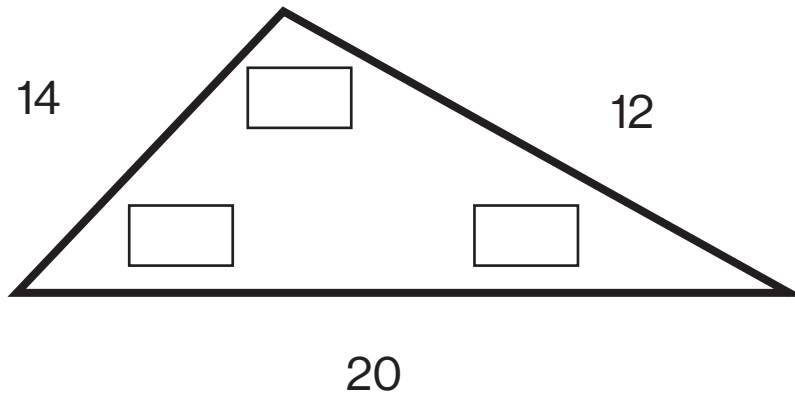
II. $A = 113^\circ$ $b = 18.2$ $c = 23.7$

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Question 4

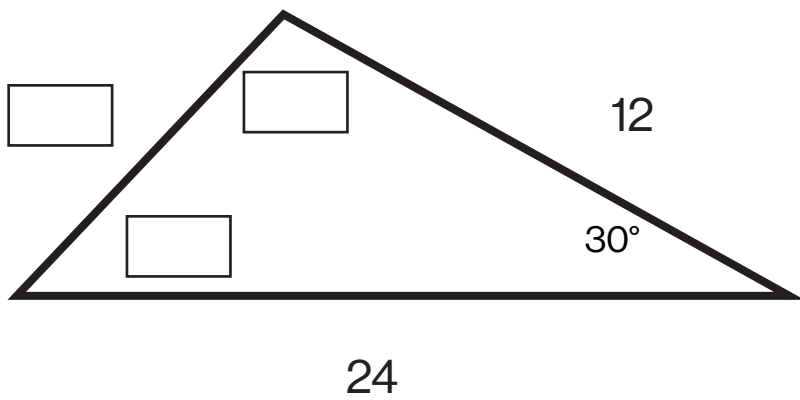
Solve the triangle (round to the nearest tenths place)

I.



Oblique Triangles Practice

II.



Oblique Triangles Practice

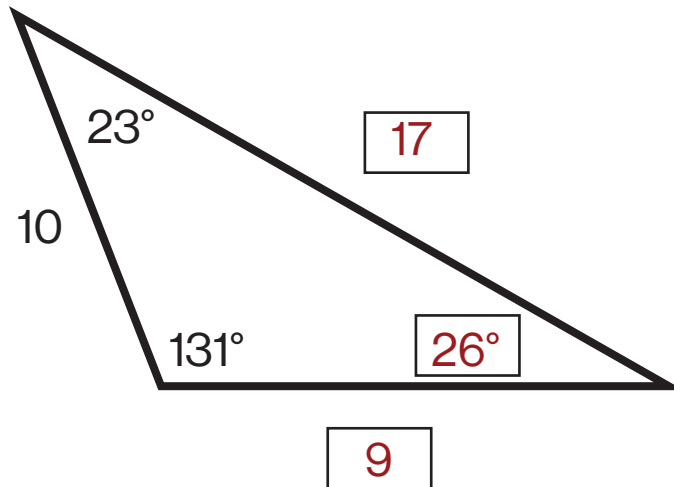
Name: Key

Date: _____

Question 1

Solve the triangle (round to the nearest whole number)

I.



ASA Triangle

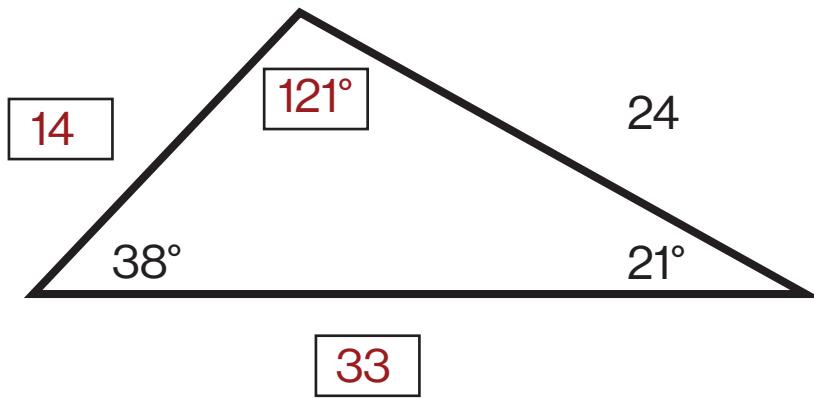
$$180^\circ - (23^\circ + 131^\circ) = 26^\circ$$

$$\frac{\sin(26^\circ)}{10} \approx \frac{\sin(23^\circ)}{x} \rightarrow 10\sin(23^\circ) = x\sin(26^\circ) \rightarrow \frac{10\sin(23^\circ)}{\sin(26^\circ)} = x \rightarrow 9 \approx x$$

$$\frac{\sin(26^\circ)}{10} \approx \frac{\sin(131^\circ)}{x} \rightarrow 10\sin(131^\circ) = x\sin(26^\circ) \rightarrow \frac{10\sin(131^\circ)}{\sin(26^\circ)} = x \rightarrow 17 \approx x$$

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II.



SAA Triangle

$$180^\circ - (38^\circ + 21^\circ) = 121^\circ$$

$$\frac{\sin(38^\circ)}{24} \neq \frac{\sin(21^\circ)}{x} \rightarrow 24\sin(21^\circ) = x\sin(38^\circ) \rightarrow \frac{24\sin(21^\circ)}{\sin(38^\circ)} = x \rightarrow 14 \approx x$$

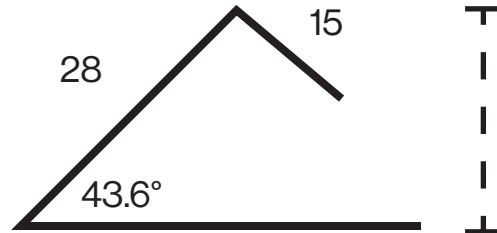
$$\frac{\sin(38^\circ)}{24} \neq \frac{\sin(121^\circ)}{x} \rightarrow 24\sin(121^\circ) = x\sin(38^\circ) \rightarrow \frac{24\sin(121^\circ)}{\sin(38^\circ)} = x \rightarrow 33 \approx x$$

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Question 2

Solve the SSA triangle (round to the nearest tenths place)

I. $A = 43.6^\circ$ $a = 15$ $b = 28$

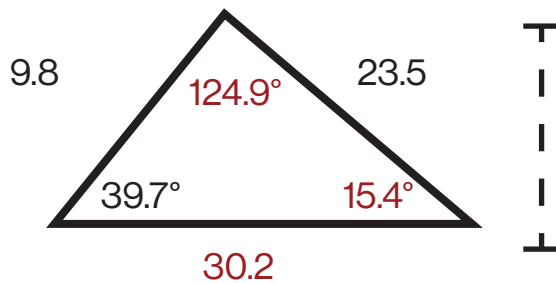


$$h = 28 \sin(43.6^\circ) \approx 19$$

$$15 < 19$$

No Triangle

II. $A = 39.7^\circ$ $a = 23.5$ $b = 9.8$



$$h = 9.8 \sin(39.7^\circ) \approx 6$$

$$23.5 > 6 \quad 23.5 > 9.8$$

One Triangle

$$\frac{\sin(39.7^\circ)}{23.5} = \frac{\sin(x)}{9.8} \rightarrow 9.8 \sin(39.7^\circ) = 23.5 \sin(x) \rightarrow \frac{9.8 \sin(39.7^\circ)}{23.5} = \sin x$$

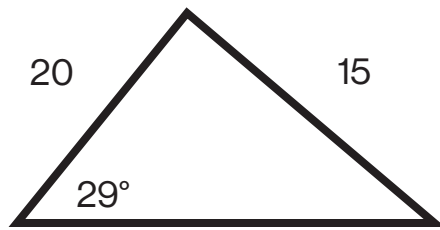
$$180^\circ - (39.7^\circ + 15.4^\circ) = 124.9^\circ$$

$$15.4^\circ \approx x \leftarrow \sin^{-1}\left(\frac{9.8 \sin(39.7^\circ)}{23.5}\right) = x$$

$$\frac{\sin(39.7^\circ)}{23.5} = \frac{\sin(124.9^\circ)}{x} \rightarrow 23.5 \sin(124.9^\circ) = x \sin(39.7^\circ) \rightarrow \frac{23.5 \sin(124.9^\circ)}{\sin(39.7^\circ)} = x \rightarrow 30.2 \approx x$$

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III. $A = 29^\circ$ $a = 15$ $b = 20$



$$h = 20 \sin(29^\circ) \approx 10$$

$$15 > 10 \quad 15 < 20$$

Two Triangles

Triangle 1:

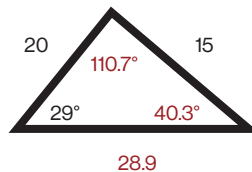
$$\frac{\sin(29^\circ)}{15} \approx \frac{\sin(x)}{20} \rightarrow 20\sin(29^\circ) = 15\sin(x) \rightarrow \frac{20\sin(29^\circ)}{15} = \sin x$$



$$180^\circ - (40.3^\circ + 29^\circ) = 110.7^\circ$$

$$40.3^\circ \approx x \leftarrow \sin^{-1}\left(\frac{20\sin(29^\circ)}{15}\right) = x$$

$$\frac{\sin(29^\circ)}{15} \approx \frac{\sin(110.7^\circ)}{x} \rightarrow 15\sin(110.7^\circ) = x\sin(29^\circ) \rightarrow \frac{15\sin(110.7^\circ)}{\sin(29^\circ)} = x \rightarrow 28.9 \approx x$$

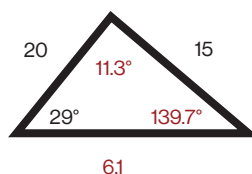


Triangle 2:

$$180^\circ - 40.3^\circ = 139.7^\circ$$

$$180^\circ - (139.7^\circ + 29^\circ) = 11.3^\circ$$

$$\frac{\sin(29^\circ)}{15} \approx \frac{\sin(11.3^\circ)}{x} \rightarrow 15\sin(11.3^\circ) = x\sin(29^\circ) \rightarrow \frac{15\sin(11.3^\circ)}{\sin(29^\circ)} = x \rightarrow 6.1 \approx x$$

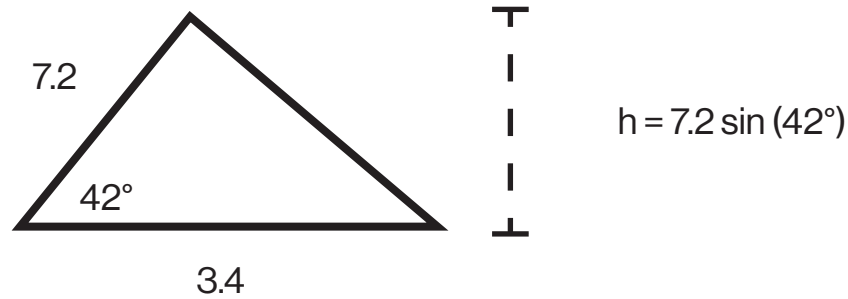


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Question 3

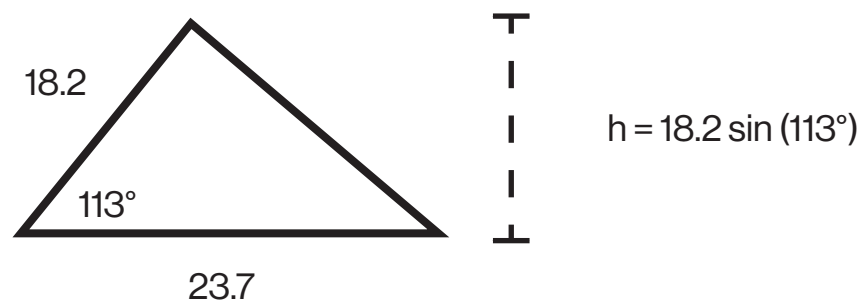
Determine the area of the triangle

I. $A = 42^\circ$ $b = 7.2$ $c = 3.4$



$$\frac{1}{2} \cdot 3.4 \cdot 7.2 \sin(42^\circ) = 8.2$$

II. $A = 113^\circ$ $b = 18.2$ $c = 23.7$



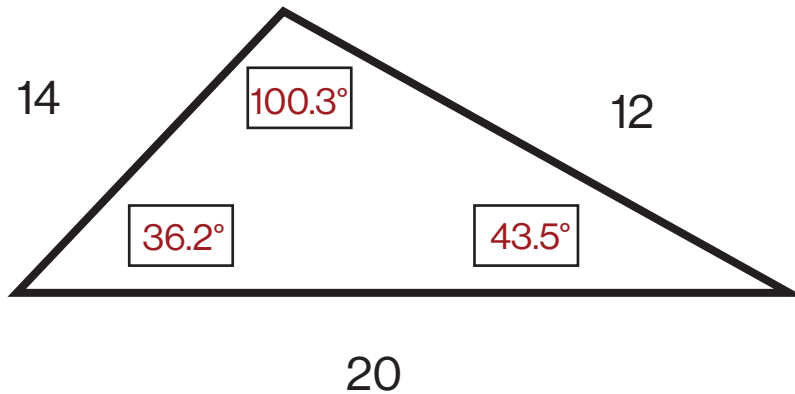
$$\frac{1}{2} \cdot 23.7 \cdot 18.2 \sin(113^\circ) = 198.5$$

Oblique Triangles Practice

Question 4

Solve the triangle (round to the nearest tenths place)

I.



SSS Triangle

$$(20)^2 = (14)^2 + (12)^2 - 2(14)(12)\cos(x) \rightarrow 400 = 340 - 336\cos(x) \rightarrow 60 = -336\cos(x)$$



$$100.3^\circ \approx x \leftarrow \cos^{-1}\left(\frac{-5}{28}\right) = x \leftarrow \frac{-5}{28} = \cos(x)$$

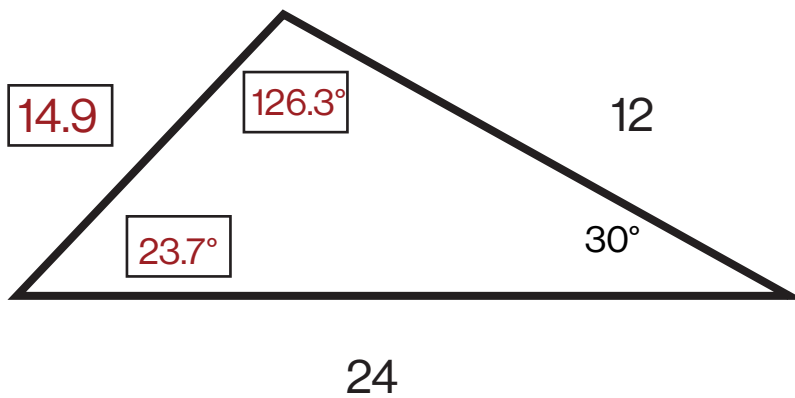
$$\frac{\sin(100.3^\circ)}{20} \neq \frac{\sin(x)}{14} \rightarrow 14\sin(100.3^\circ) = 20\sin(x) \rightarrow \frac{14\sin(100.3^\circ)}{20} = \sin x$$



$$180^\circ - (43.5^\circ + 100.3^\circ) = 36.2^\circ \quad 43.5^\circ \approx x \leftarrow \sin^{-1}\left(\frac{14\sin(100.3^\circ)}{20}\right) = x$$

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II.



SAS Triangle

$$(x)^2 = (12)^2 + (24)^2 - 2(12)(24)\cos(30^\circ) \rightarrow x = \sqrt{(12)^2 + (24)^2 - 2(12)(24)\cos(30^\circ)}$$

$$\downarrow$$

$$x = 14.9$$

$$\frac{\sin(30^\circ)}{14.9} \stackrel{\times}{=} \frac{\sin(x)}{12} \rightarrow 12\sin(30^\circ) = 14.9\sin(x) \rightarrow \frac{12\sin(30^\circ)}{14.9} = \sin x$$

$$\downarrow$$

$$180^\circ - (30^\circ + 23.7^\circ) = 126.3^\circ \quad 23.7^\circ \approx x \leftarrow \sin^{-1}\left(\frac{12\sin(30^\circ)}{14.9}\right) = x$$