Name _____ Date _____

(Altitude)^2 = (Part$_1$)(Part$_2$) of Hypotenuse

(Leg)^2 = (Part)(Hypotenuse) of Hyp.

(alt)^2 = PH$_1$(PH$_2$)

(Leg)^2 = PH(Hyp)

LESSON 7.3

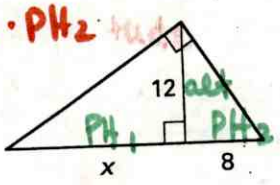
Practice

For use with pages 448–456

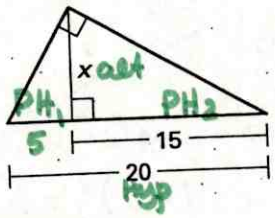
Complete and solve the proportion.

1. $\frac{x}{12} = \frac{?}{8}$ 12

alt^2 = PH$_1$ · PH$_2$



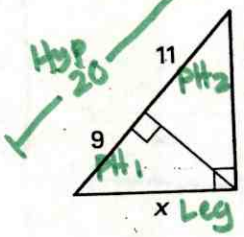
2. $\frac{15}{x} = \frac{x}{?}$ 5



alt^2 = PH$_1$ · PH$_2$

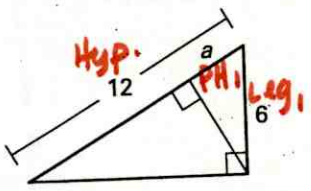
3. $\frac{9}{x} = \frac{x}{?}$ 20

Leg^2 = PH$_1$ · Hyp



Find the value(s) of the variable(s).

4.



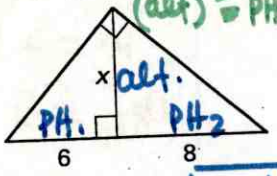
(Leg)^2 = Hyp(PH)

$6^2 = 12q$

$36 = 12q$

$q = 3$

5.



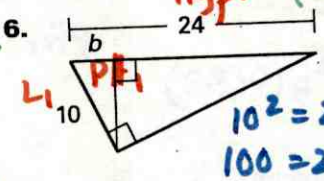
(alt)^2 = PH$_1$ · PH$_2$

$x^2 = 6 \cdot 8$

$x^2 = 48$

$x = 4\sqrt{3}$

6.



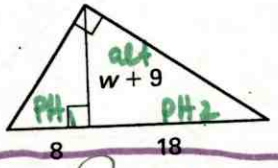
(Leg)^2 = PH · Hyp

$10^2 = 24b$

$100 = 24b$

$b = 25/6$ or $4\frac{1}{2}$

7.



alt^2 = PH$_1$ · PH$_2$

$(w+9) = 8(18)$

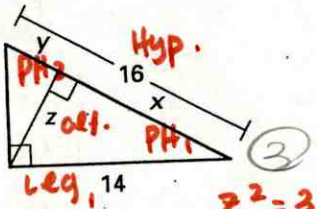
$w^2 + 18w + 81 = 144$

$w^2 + 18w - 63 = 0$

$(w-3)(w+21) = 0$

$w = 3$ $w = -21$

8.



① $14^2 = 16x$

$196 = 16x$

$x = 12.25$

$49/4$

② $y = 16 - 12.25$

$y = 3.75$

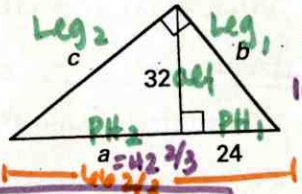
$15/4$

③ $z^2 = 3.75(12.25)$

$\sqrt{z^2} = \sqrt{45.9375}$ or $\sqrt{\frac{735}{16}}$

$z = 6.78$ or $\frac{7\sqrt{15}}{4}$

9.



alt^2 = PH$_1$ · PH$_2$

$32^2 = 24a$

$1024 = 24a$

$a = 42\frac{2}{3}$ or $42.\overline{6}$

$b^2 = 32^2 + 24^2$

$b^2 = 1600$

$b = 40$

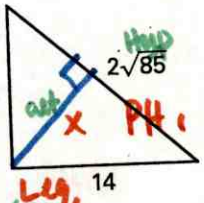
$c^2 = 42\frac{2}{3}(66\frac{2}{3})$

$c = 53\frac{1}{3}$

Tell whether the triangle is a right triangle. If so, find the length of the altitude to the hypotenuse. Round decimal answers to the nearest tenth.

$c^2 = a^2 + b^2$

10.



$(2\sqrt{85})^2 = 12^2 + 14^2$ ✓

$(2)^2(\sqrt{85})^2$

$4(85)$

(Leg)^2 = Hyp (PH$_1$)

Leg$_1$

$14^2 = (2\sqrt{85})PH_1$

$196 = (2\sqrt{85})PH_1$

$PH_1 = 10.6$

$PH_2 = 2\sqrt{85} - 10.6$

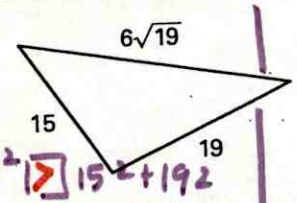
$PH_2 = 7.8$

alt^2 = PH$_1$ · PH$_2$

$x^2 = 10.6(7.8)$

$x = 9.1$

11.

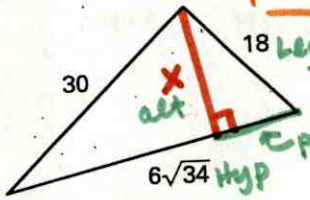


$(6\sqrt{19})^2 \;?\; 15^2 + 19^2$

$684 \quad 225 + 361$

obtuse

12.



$(6\sqrt{34})^2 = 30^2 + 18^2$ ✓

(Leg)^2 = Hyp · PH$_1$

$18^2 = (6\sqrt{34})PH_1$

$PH_1 = 9.3$

$PH_2 = 6\sqrt{34} - 9.3$

$PH_2 = 25.7$

(alt)^2 = PH$_1$ · PH$_2$

$x^2 = 9.3(25.$

$x = 15.4$

Name _____ Date _____

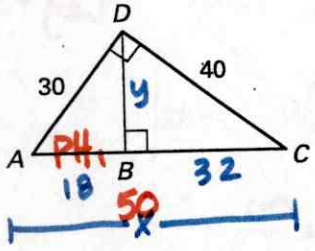
LESSON 7.3

Practice *continued*

For use with pages 448–456

Use the Geometric Mean Theorems to find AC and BD.

13.



$x^2 = 30^2 + 40^2$

$x = 50$

$AC = 50$

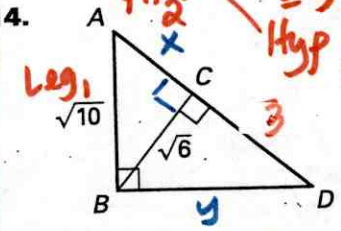
$30^2 = 50 \cdot PH_1$

$900 = 50 \cdot PH_1$

$PH_1 = 18$

$y^2 = 18(32)$

14.



$PH_2 = 5$

Hyp $= y$

$(\sqrt{10})^2 = x^2 + (\sqrt{6})^2$

$10 = x^2 + 6$

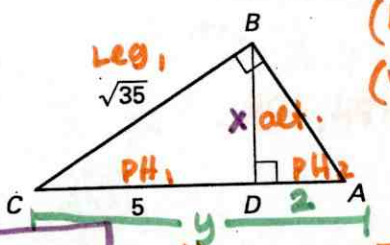
$x = 2$

$(\sqrt{10})^2 = 2 \cdot Hyp$

$10 = 2 \cdot Hyp$

$Hyp = 5$

15.



$(Leg_1)^2 = PH_1 \cdot Hyp$

$(\sqrt{35})^2 = 5y$

$35 = 5y$

$y = 7$

$AC = 7$

$y^2 = 3(5)$

$y = \sqrt{15}$

$(alt)^2 = PH_1 \cdot PH_2$

$x^2 = 5(2)$

$x^2 = 10$

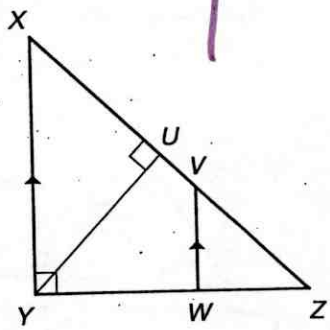
$x = \sqrt{10}$

$BD = \sqrt{10}$

16. Complete the proof.

GIVEN: $\triangle XYZ$ is a right triangle with $m\angle XYZ = 90°$.
$\overline{VW} \parallel \overline{XY}$, $\overline{YU}$ is an altitude of $\triangle XYZ$.

PROVE: $\triangle YUZ \sim \triangle VWZ$



Statements	Reasons
1. $\triangle XYZ$ is a right $\triangle$ with altitude $\overline{YU}$.	1. ?
2. $\triangle XYZ \sim \triangle YUZ$	2. ?
3. $\overline{VW} \parallel \overline{XY}$	3. ?
4. $\angle VWZ \cong \angle XYZ$	4. ?
5. $\angle Z \cong \angle Z$	5. ?
6. ?	6. AA Similarity Postulate
7. $\triangle YUZ \sim \triangle VWZ$	7. ?