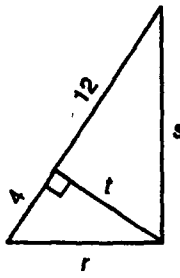
Name Key Date

In Exercises 1 to 3, find the values of r, s, *and* t.

1.



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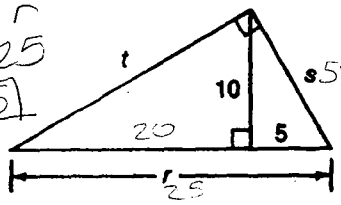

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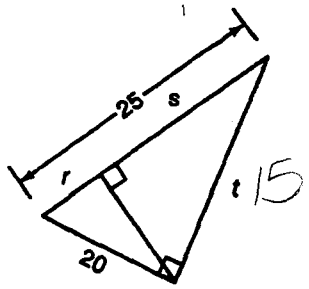


In Exercises 4 to 9, in right triangle JKL, angle JKL is the right angle and $\overline{KH} \perp \overline{JL}$.

4. If $JH = 4$ and $HL = 16$, find KH.

5. If $JH = 5$ and $HL = 4$, find KL.

6. If $JH = 8$, $JL = 20$, find KH.

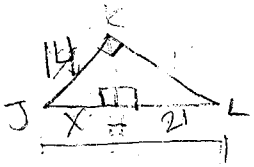
7. If $KL = 18$, $JL = 27$, find JK.

8. If $JK = 14$, $HL = 21$, find JH.

9. If $KH = 12$, $JL = 40$, find JK (assume $\overline{JK}$ is the shorter leg of right $\triangle JKL$).

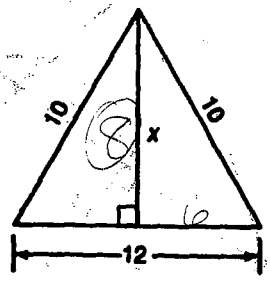
10. The altitude drawn to the hypotenuse of a right triangle divides the hypotenuse into segments such that their lengths are in the ratio of 1:4. If the length of the altitude is 8, find the length of:

(a) Each segment of the hypotenuse. (b) The longer leg of the triangle.

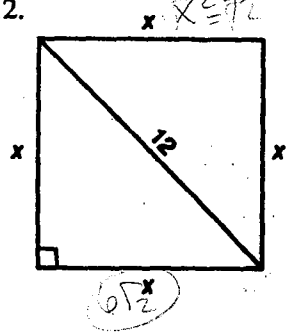


In Exercises 11 to 15, find the value of x.

11.



12.



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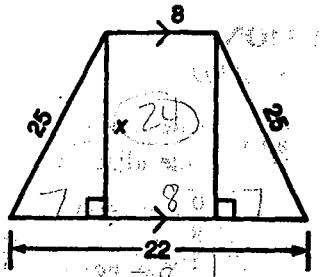

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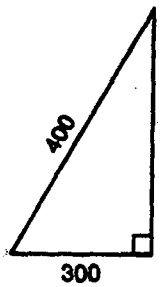

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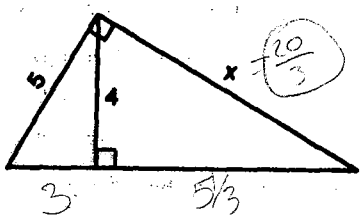
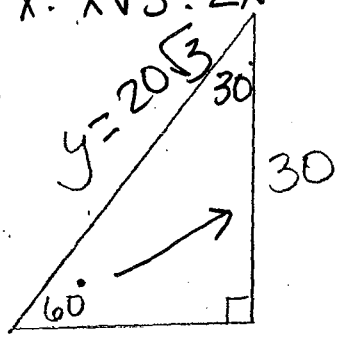


Name Key Date

Special Right Triangles

Find x + y:

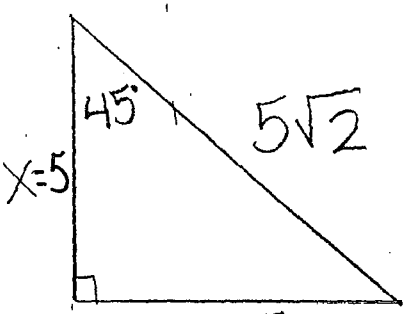
1. $x : x\sqrt{3} : 2x$



$X = 10\sqrt{3}$

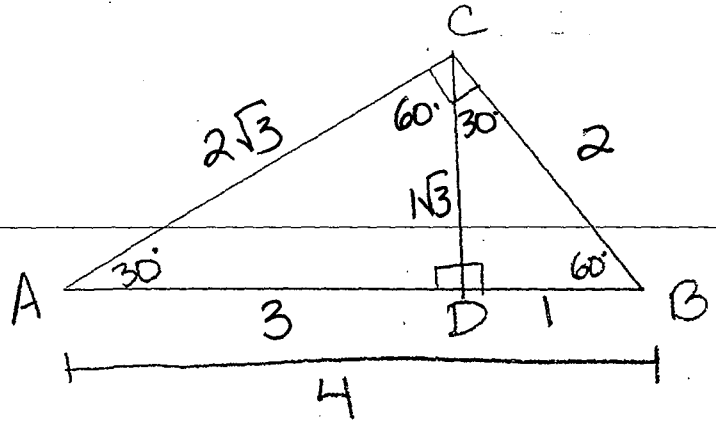
$\frac{x\sqrt{3}}{\sqrt{3}} = \frac{30}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{30\sqrt{3}}{3} = 10\sqrt{3}$

2. $x : x : x\sqrt{2}$



$y = 5$

3.



Find: $CB = 2$

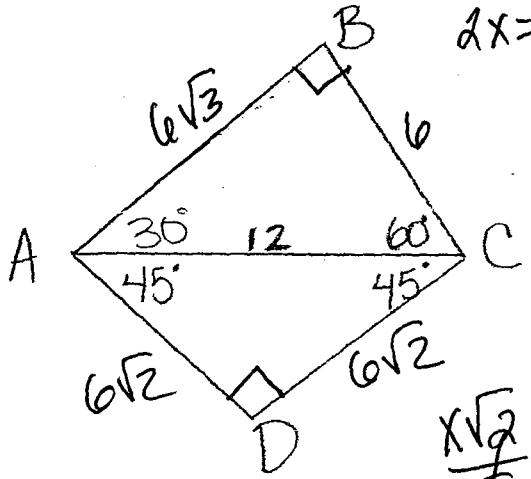
$DB = 1$

$AD = 3$

$CD = \sqrt{3}$

$AC = 2\sqrt{3}$

4.



$2x = 12$

$\frac{x\sqrt{2}}{\sqrt{2}} = \frac{12}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{12\sqrt{2}}{2}$

$= 6\sqrt{2}$

Find: $AB = 6\sqrt{3}$

$BC = 6$

$CD = 6\sqrt{2}$

$DA = 6\sqrt{2}$

⑤ Is this triangle acute, right, or obtuse?

a) 4, 6, 7

$4 + 6 \stackrel{?}{>} 7$

$10 > 7$ ... can form a △

$4^2 + 6^2 \stackrel{?}{>} 7^2$

$52 > 49$ ∴ acute

b) 9, 10, 15

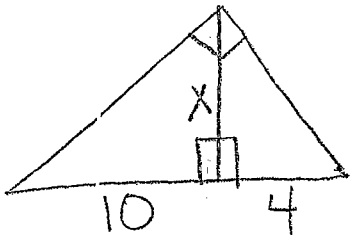
$c + 10 \stackrel{?}{>} 15$

$19 > 15$ ... can form a △

$9^2 + 10^2 \stackrel{?}{>} 15^2$

$181 < 225$ ∴ obtuse

⑥



$\frac{P1}{alt} = \frac{alt}{P2}$

$\frac{?}{x} = \frac{x}{4}$

$\sqrt{x^2} = \sqrt{40}$

$\boxed{x = 2\sqrt{10}}$

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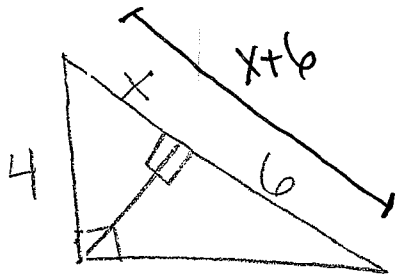
⑦



$\frac{\text{leg}}{\text{hyp}} = \frac{\text{leg}}{\text{hyp}}$

$\frac{x}{4} = \frac{4}{x+6}$

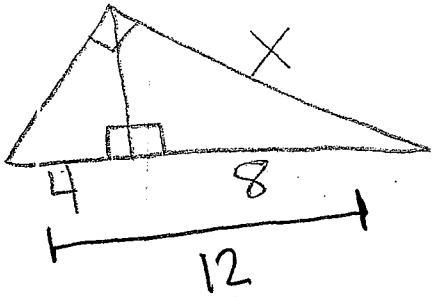
$x^2 + 6x = 16$

$x^2 + 6x - 16 = 0$

$(x+8)(x-2) = 0$

$x = -8$ reject | $\boxed{x = 2}$

⑧



$\frac{8}{x} = \frac{x}{12}$

$x^2 = \sqrt{96} < \frac{\sqrt{16}}{\sqrt{6}}$

$\boxed{x = 4\sqrt{6}}$