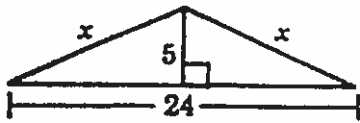


Honors Geometry
8.1-8.4 - Extra Practice

Name Key

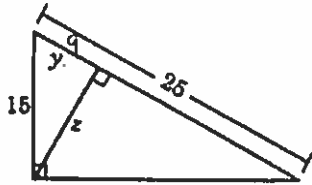
1. Find x.



$$12^2 + 5^2 = x^2$$

$$13 = x$$

2. a. Find y
b. Find z



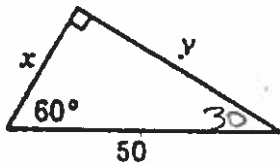
$$\frac{y}{15} = \frac{15}{25}$$

$$y = 9$$

$$\frac{9}{z} = \frac{z}{16}$$

$$z = 12$$

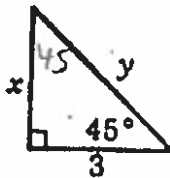
3. a. Find x
b. Find y



$$x = 25$$

$$y = 25\sqrt{3}$$

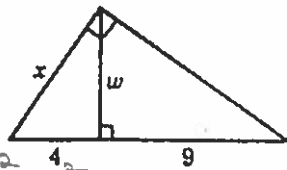
4. a. Find x
b. Find y



$$x = 3$$

$$y = 3\sqrt{2}$$

5. a. Find x
b. Find y



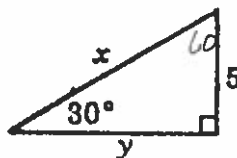
$$\frac{4}{w} = \frac{w}{9}$$

$$w = 6$$

$$4^2 + 6^2 = x^2$$

$$75^2 = x^2$$

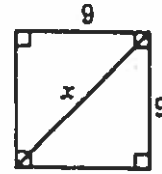
6. a. Find x
b. Find y



$$x = 10$$

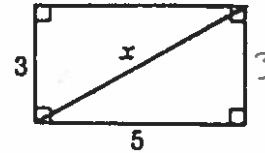
$$y = 5\sqrt{3}$$

7. Find x.



$$x = 9\sqrt{2}$$

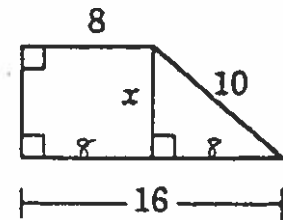
8. Find x.



$$3^2 + 5^2 = x^2$$

$$\sqrt{34} = x$$

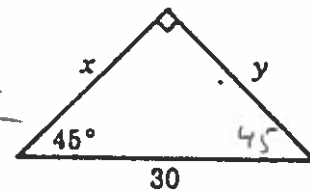
9. Find x.



$$x^2 + 8^2 = 10^2$$

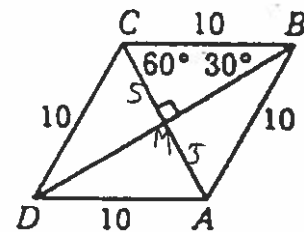
$$x = 6$$

10. a. Find x
b. Find y



$$x = y = \frac{30}{\sqrt{2}} = 15\sqrt{2}$$

11. a. Find AC
b. Find BD



$$CM = 5 \rightarrow AC = 10$$

$$MB = 5\sqrt{3} \rightarrow BD = 10\sqrt{3}$$

12. For the rectangular solid shown, find the length of \overline{DF} .

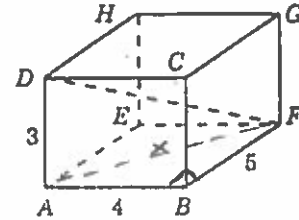
$$4^2 + 5^2 = x^2$$

$$\sqrt{41} = x$$

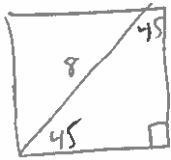
$$3^2 + \sqrt{41}^2 = DF^2$$

$$9 + 41 = DF^2$$

$$\sqrt{50} = DF = 5\sqrt{2}$$



13. A diagonal of a square has length 8. Find the length of a side.



$$\frac{8}{\sqrt{2}} = 4\sqrt{2}$$

14. State whether a triangle with sides of the given lengths is acute, right or obtuse.

a. 7, 8, 10

$$10^2 \square 7^2 + 8^2$$

$$100 \square 113$$

acute

b. 6, 9, 11

$$11^2 \square 6^2 + 9^2$$

$$121 \square 117$$

obtuse

c. $3n, 4n, 5n$ ($n > 0$)

$$(5n)^2 \square (3n)^2 + (4n)^2$$

$$25n^2 \square 25n^2$$

right

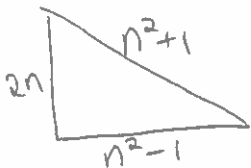
d. $4, 6, 2\sqrt{13}$ (7.2)

$$(2\sqrt{13})^2 \square 4^2 + 6^2$$

$$52 \square 52$$

right

15. A right triangle has sides whose lengths are represented by $n^2 - 1$, $2n$ and $n^2 + 1$. If the length of the longer leg is 48, find the lengths of the shorter leg and the hypotenuse.



$$n^2 - 1 = 48$$

$$n^2 = 49$$

$$n = 7$$

sh. leg = 14

hyp. = 50

16. Find each of the following in simplest form.

- a. If $BD = 4$, find AD

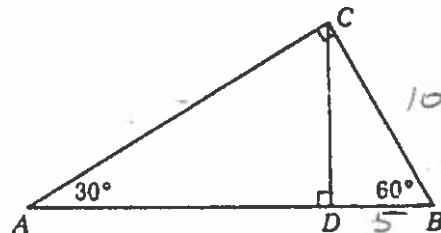
$$12$$

- b. If $AC = 12$, find BD

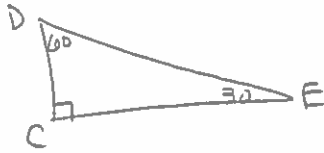
$$\frac{6}{\sqrt{3}} = 2\sqrt{3}$$

- c. If $AB = 20$, find CD

$$5\sqrt{3}$$

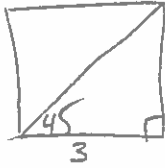


17. In $\triangle CDE$, $m\angle C = 90$, $m\angle D = 60$, and $m\angle E = 30$. Which side of the triangle is the longer leg?



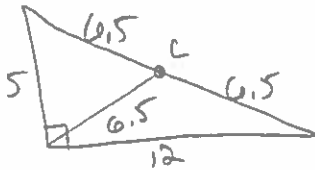
CE

18. A side of a square has length 3. Find the length of a diagonal.



$$3\sqrt{2}$$

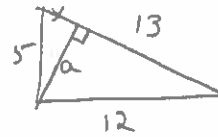
19. A right triangle has legs of 5 and 12. Find the length of median and altitude to its hypotenuse.



$$12^2 + 5^2 = c^2$$

$$13 = c$$

$$\text{Median} = 6.5$$



$$\frac{x}{5} = \frac{5}{13}$$

$$x \approx 1.9$$

$$5^2 = (1.9)^2 + a^2$$

$$4.6 \approx a$$

20. Use the diagram to find the given lengths.

- a. If $a = 8$ and $b = 6$, find c .

$$c = 10$$

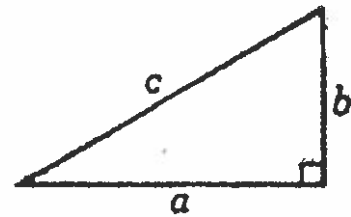
- b. If $a = 6$ and $b = 3$, find c .

$$c = \sqrt{45} = 3\sqrt{5}$$

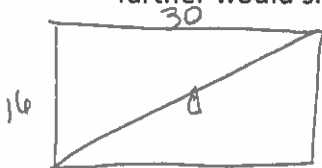
- c. If $b = \sqrt{17}$ and $c = 9$, find a .

$$9^2 = (\sqrt{17})^2 + a^2$$

$$8 = a$$



21. Angela took a shortcut by walking along the diagonal of a 30m by 16m rectangular field. How much farther would she have had to walk if she had walked along the edge of the field?



$$d^2 = 16^2 + 30^2$$

$$d = 34$$

$$30 + 16 = 46$$

$$46 - 34 = \boxed{12 \text{ m}}$$

22. A right triangle has the side lengths of $3n$, $2n$ and $\sqrt{13}n$. Find the length of each side.

$$(\sqrt{13}n)^2 = (3n)^2 + (2n)^2$$

$$13n^2 = 9n^2 + 4n^2$$

$$13n^2 = 13n^2$$

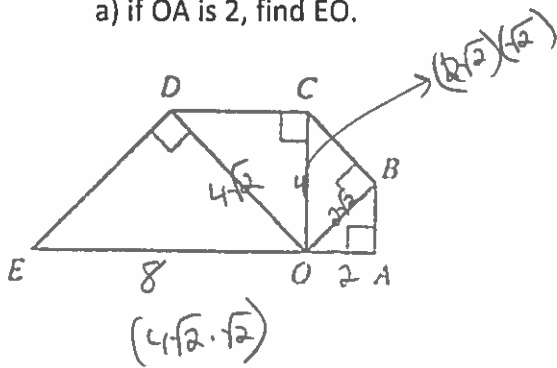
$$n = \text{TR}$$

CANNOT SOLVE

23. The diagram shows four 45-45-90 triangles.

a) if OA is 2, find EO.

b) if EO is 8 find OA.



24. O is the center of square ABCD, and VO is perpendicular to the plane of the square. Find OE, the distance from O to the plane of triangle VBC.

$$16^2 + 12^2 = VX^2$$

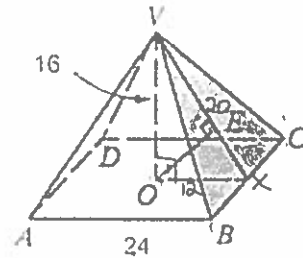
$$20 = VX$$

$$12^2 = OE^2 + 7.2^2$$

$$9.6 = OE$$

$$\frac{EX}{12} = \frac{12}{20}$$

$$EX = 7.2$$



25. A right triangle has the side lengths of $(4n - 4)$, $2n$, and $\sqrt{13}n$. Find the length of each side.



$$4n - 4 = 2$$

$$2n = 3$$

$$\sqrt{13}n = \frac{3\sqrt{13}}{2}$$

$$n > 2$$

$$(\sqrt{13})^2 = (4n - 4)^2 + (2n)^2$$

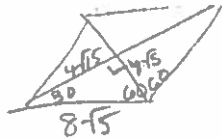
$$13 = 16n^2 - 32n + 16 + 4n^2$$

$$0 = 20n^2 - 32n + 3$$

$$0 = (2n - 3)(10n - 1)$$

$$n = \frac{3}{2} \quad n = \frac{1}{10}$$

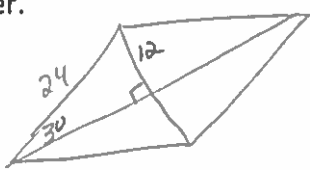
26. A rhombus has a perimeter of $32\sqrt{5}$, and one of its angles is 120° . Find the lengths of both diagonals.



$$8\sqrt{5}$$

$$8\sqrt{5}$$

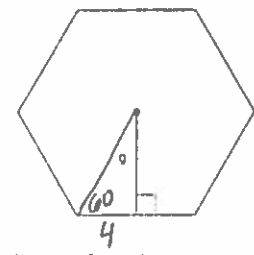
27. The length of the shorter diagonal of a rhombus is 24. If one of its angles is 60° , find the length of its perimeter.



$$24 \cdot 4 = 96$$

28. A regular hexagon has a side length of 8. Find the distance from the center of the hexagon to the side.

$$4\sqrt{3}$$



g = distance from the center to the side.

29. O is the center of square ABCD, and VO is perpendicular to the plane of the square. Find OE, the distance from O to the plane of triangle VBC.

