Name Key Date _____ Block ____ Log # ____

Working with the Pythagorean Theorem

DIRECTIONS: Find the value of each. Round to the nearest thousandth, if necessary.

1) $\sqrt{196} =$ 14

2) $\sqrt{784} =$ 28

3) $\sqrt{2704} =$ 52

4) $\sqrt{800} =$ 28.284

$\sqrt{8}\sqrt{100}$
$\sqrt{2}\sqrt{4}\sqrt{100}$
$\sqrt{2}\cdot 2\cdot 10$
$20\sqrt{2}$

$20\sqrt{2}$

5) $\sqrt{246} =$ 15.684

$\sqrt{2}\sqrt{123}$
$\sqrt{2}\sqrt{41}\sqrt{3}$

6) $\sqrt{643} =$ 25.357

DIRECTIONS: Multiply to find each value. Round to the nearest thousandth, if necessary.

7) $3\sqrt{5} =$ 6.708

8) $4\sqrt{3} =$ 6.928

9) $6\sqrt{2} =$ 8.485

10) $7\sqrt{11} =$ 23.216

11) $12\sqrt{7} =$ 31.749

12) $5\sqrt{2} =$ 7.071

DIRECTIONS: Evaluate each of the following.

13) $16^2 =$ 256

14) $\left(\sqrt{36}\right)^2 =$ 36

15) $\left(\sqrt{9}\right)^2 =$ 9

16) $\left(\sqrt{13}\right)^2 =$ 13

17) $\left(\sqrt{11}\right)^2 =$ 11

18) $\left(\sqrt{x}\right)^2 =$ x

DIRECTIONS: The hypotenuse will always be the longest side of a right triangle. Use the Pythagorean Theorem to determine if the given measurements form a right triangle.

19) 10 24 25

$a^2+b^2=c^2$
$10^2+24^2=25^2$
$100+576=625$
$676 \neq 625$ NO!

20) 12 16 20

$a^2+b^2=c^2$
$12^2+16^2=20^2$
$144+256=400$
$400=400$ ✓
Yes!

21) 4 6 8

$a^2+b^2=c^2$
$4^2+6^2=8^2$
$16+36=64$
$52=64$ NO!

22) 3 5 $\sqrt{34}$

$a^2+b^2=c^2$
$3^2+5^2=(\sqrt{34})^2$
$9+25=34$
$34=34$
Yes!

23) 5 $\sqrt{11}$ 6

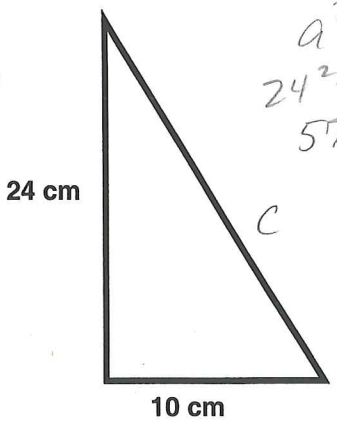
$a^2+b^2=c^2$
$5^2+(\sqrt{11})^2=6^2$
$25+11=36$
$36=36$
Yes!

24) $\sqrt{7}$ 2 3

$a^2+b^2=c^2$
$(\sqrt{7})^2+2^2=3^2$
$7+4=9$
$11=9$ NO!

DIRECTIONS: Determine the missing side of each right triangle.

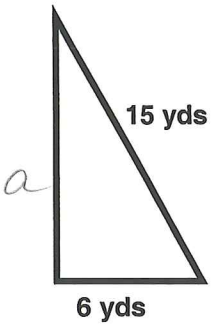
25)



$a^2+b^2=c^2$
$24^2+10^2=c^2$
$576+100=c^2$
$\sqrt{676}=\sqrt{c^2}$
$26=c$

a. $4\sqrt{17}$ b. 26
c. $17\sqrt{4}$ d. $\sqrt{26}$

26)



$a^2+b^2=c^2$
$a^2+6^2=15^2$
$a^2+36=225$
$a^2=189$
$\sqrt{a^2}=\sqrt{9}\sqrt{21}$
$a=3\sqrt{21}$

a. $\sqrt{42}$ b. $3\sqrt{2}$
c. $3\sqrt{29}$ d. $3\sqrt{21}$

13.75

27) The two legs of right triangle measure 8 meters and 11 meters. Find the hypotenuse.

a. $\sqrt{185}$ b. $\sqrt{6}$ c. $\sqrt{57}$ d. 57

$a^2+b^2=c^2$
$8^2+11^2=c^2$
$64+121=c^2$
$\sqrt{185}=\sqrt{c^2}$
$\sqrt{185}=c$

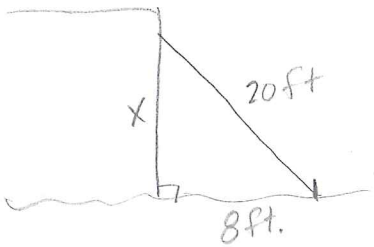
28) The two legs of a right triangle both measure $3\sqrt{2}$ feet. Find the hypotenuse.

a. $3\sqrt{2}$. b. $\sqrt{6}$ c. 6 d. 18

$(3\sqrt{2})^2 \cdot (\sqrt{2})^2$
$3^2 \cdot 2 \cdot 2$
18

$a^2+b^2=c^2$
$(3\sqrt{2})^2+(3\sqrt{2})^2=c^2$
$18+18=c^2$
$\sqrt{36}=\sqrt{c^2}$
$6=c^2$

29) The foot of a ladder is 8 feet from the base of a wall. If the ladder is 20 feet long, how high up on the wall does the ladder reach? Round your answer to the nearest tenth. (Draw a diagram to help you see the right triangle)



$a^2+b^2=c^2$
$a^2+8^2=20^2$
$a^2+64=400$
$\sqrt{a^2}=\sqrt{336}$
$a=18.3$

$\sqrt{336}$
$\sqrt{3}\sqrt{112}$
$\sqrt{3}\sqrt{4}\sqrt{28}$
$\sqrt{3}\,2\,\sqrt{4}\sqrt{7}$
$\sqrt{3}\cdot 2\cdot 2\cdot\sqrt{7}$
$4\sqrt{21}$