NAME _____

Simplify

#1 $\sqrt{108}$ — #1 _____

#2 $\sqrt{125}$ — #2 _____

#3 $\sqrt{20A^2B^3}$ — #3 _____

#4 $\sqrt{27x^3M^5}$ — #4 _____

#5 $\sqrt{5/3}$ — #5 _____

#6 $\sqrt{4/7}$ — #6 _____

#7 $\sqrt{147/3}$ — #7 _____

#8 $\frac{2\sqrt{3}}{3-\sqrt{5}}$ — #8 _____

#9 $\frac{3}{2+\sqrt{4}}$ — #9 _____

#10 $8\sqrt{27} - 5\sqrt{12} + 2\sqrt{75}$ — #10 _____

#11 $\sqrt{5} - 6\sqrt{20}$ — #11 _____

#12 $3\sqrt{18} - 2\sqrt{50} + 6\sqrt{12}$ — #12 _____

Pythagorean Theorem

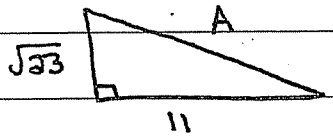
#13 A= _____

#14 X= _____

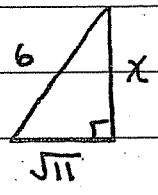
#15 M= _____

#16 l= _____

#13



#14



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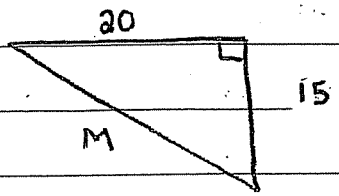

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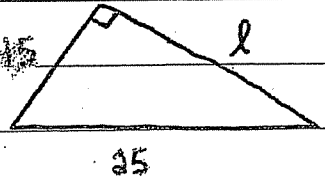


#1 $\sqrt{108}$

$\sqrt{2^2 \cdot 3^2 \cdot 3}$

$6\sqrt{3}$

$2|108$, $2|54$, $3|27$, $3|9$, 3

#2 $\sqrt{125}$

$\sqrt{5^2 \cdot 5}$

$5\sqrt{5}$

$5|125$, $5|25$, 5

#3 $\sqrt{20A^2B^3}$

$\sqrt{2^2 \cdot 5 \cdot A^2 \cdot B^2 \cdot B}$

$2|AB|\sqrt{5B}$

$2|20$, $2|10$, 5

#4 $\sqrt{27x^3y}$

$\sqrt{3^2 \cdot 3 \cdot x^2 \cdot xy}$

$3|xy|\sqrt{3xy}$

$3|27$, $3|9$, 3

#5 $\sqrt{\frac{5}{3}}$

$\frac{\sqrt{5}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$\frac{\sqrt{15}}{3}$

#6 $\sqrt{\frac{4}{7}}$

$\frac{\sqrt{4}}{\sqrt{7}} = \frac{2}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}}$

$\frac{2\sqrt{7}}{7}$

#7 $\frac{\sqrt{147}}{\sqrt{3}} = \sqrt{49}$

$= 7$

#8 $\frac{2\sqrt{3}}{3-\sqrt{5}}$

$\frac{2\sqrt{3}}{3-\sqrt{5}} \cdot \frac{3+\sqrt{5}}{3+\sqrt{5}}$

$\frac{2\sqrt{3}(3+\sqrt{5})}{9-5}$

$\frac{2\sqrt{3}(3+\sqrt{5})}{4}$: REDUCE 2 AND 4

$\frac{\sqrt{3}(3+\sqrt{5})}{4}$: DISTRIBUTE

$\frac{3\sqrt{3}+\sqrt{15}}{4}$

#9 $\frac{3}{2+\sqrt{4}}$

$\frac{3}{2+2}$: $\sqrt{4} = 2$

$\frac{3}{4}$

#10 $8\sqrt{27} - 5\sqrt{12} + 2\sqrt{75}$

$8\sqrt{3^2 \cdot 3} - 5\sqrt{2^2 \cdot 3} + 2\sqrt{5^2 \cdot 3}$

$24\sqrt{3} - 10\sqrt{3} + 10\sqrt{3}$

$24\sqrt{3}$

#11 $\sqrt{5} - 6\sqrt{20}$

$\sqrt{5} - 6\sqrt{2^2 \cdot 5}$

$\sqrt{5} - 12\sqrt{5}$

$-11\sqrt{5}$

#12 $3\sqrt{18} - 2\sqrt{50} + 6\sqrt{12}$

$3\sqrt{3^2 \cdot 2} - 2\sqrt{5^2 \cdot 2} + 6\sqrt{2^2 \cdot 3}$

$9\sqrt{2} - 10\sqrt{2} + 12\sqrt{3}$

$-\sqrt{2} + 12\sqrt{3}$

#13

$l^2 + l^2 = h^2$

$(\sqrt{23})^2 + (11)^2 = h^2$

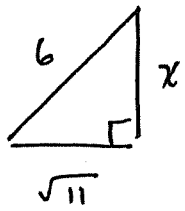
$23 + 121 = h^2$

$144 = h^2$

$12 = h$

A = 12

#14



$l^2 + l^2 = h^2$

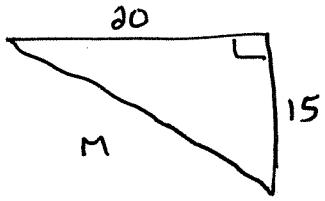
$(\sqrt{11})^2 + x^2 = 6^2$

$11 + x^2 = 36$

$x^2 = 25$

x = 5

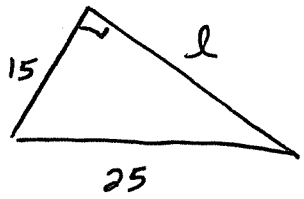
#15



3(5) : 4(5) : 5(5)

M = 25

#16



3(5) : 4(5) : 5(5)

l = 20

#17 $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

#18 $\dfrac{4 \pm \sqrt{16 - 4(4)(-3)}}{2(4)}$

$\dfrac{4 \pm \sqrt{16 + 48}}{8}$

$\dfrac{4 \pm \sqrt{64}}{8}$

$\dfrac{4 \pm 8}{8}$

$\dfrac{4-8}{8}, \dfrac{4+8}{8}$

$\dfrac{-4}{8} \quad \dfrac{12}{8}$

$\left\{-\frac{1}{2}, \frac{3}{2}\right\}$

#19 $\dfrac{-21 \pm \sqrt{441 - 4(2)(40)}}{2(2)}$

$\dfrac{-21 \pm \sqrt{441 - 320}}{4}$

$\dfrac{-21 \pm \sqrt{121}}{4}$

$\dfrac{-21 \pm 11}{4}$

$\dfrac{-21-11}{4}, \dfrac{-21+11}{4}$

$\dfrac{-32}{4} \quad \dfrac{-10}{4}$

$\{-8, -2\frac{1}{2}\}$

#20

$\sqrt{m+2} = m-4$

$\left[\sqrt{m+2}\right]^2 = [m-4]^2$

$m+2 = m^2-8m+16$

$-m \quad -2 \qquad -m \quad -2$

$0 = m^2-9m+14$

$0 = (m-7)(m-2)$

CHECK RESULTS $\Rightarrow$ $m=7 \quad m=2$

$\boxed{m=7}$

#21

$\sqrt{4x+1} = 3$

$\left[\sqrt{4x+1}\right]^2 = 3^2$

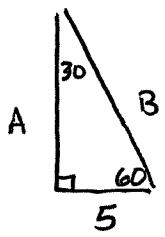
$4x+1 = 9$

$4x = 8$

CHECK RESULT $\Rightarrow$ $x=2$

$\boxed{x=2}$

#22



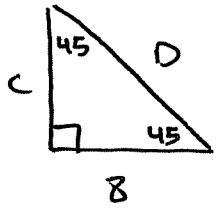
SL : LL : H

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

$5 : 5\sqrt{3} : 10$

$\boxed{A = 5\sqrt{3} \quad B = 10}$

#23



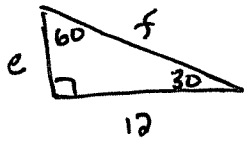
L : L : H

$1 : 1 : 1\sqrt{2}$

$8 : 8 : 8\sqrt{2}$

$\boxed{C = 8 \quad D = 8\sqrt{2}}$

#24



SL : LL : H

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

$4\sqrt{3} : 12 : 8\sqrt{3}$

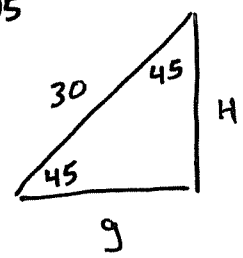
$\boxed{e = 4\sqrt{3} \quad f = 8\sqrt{3}}$

$SL = \frac{12}{\sqrt{3}}$

$\frac{12}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$\frac{12\sqrt{3}}{3} = 4\sqrt{3}$

#25



L : L : H

$1 : 1 : 1\sqrt{2}$

$15\sqrt{2} : 15\sqrt{2} : 30$

$\boxed{g = 15\sqrt{2} \quad H = 15\sqrt{2}}$

$L = \frac{30}{\sqrt{2}}$

$= \frac{30}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$\frac{30\sqrt{2}}{2}$

$15\sqrt{2}$

DISTANCE FORMULA

$$d = \sqrt{(\Delta x)^2 + (\Delta y)^2}$$

#26

Δx: -3 Δy: 4

$(3,0)$, $(0,4)$

$$d = \sqrt{(-3)^2 + (4)^2}$$
$$= \sqrt{9+16}$$
$$= \sqrt{25}$$
$$= 5$$

#27

Δx: $2\sqrt{5}$ Δy: -6

$(2\sqrt{5}, 9)$, $(4\sqrt{5}, 3)$

$$d = \sqrt{(2\sqrt{5})^2 + (-6)^2}$$
$$= \sqrt{4 \cdot 5 + 36}$$
$$= \sqrt{20 + 36}$$
$$= \sqrt{56}$$
$$= \sqrt{2^2 \cdot 14}$$
$$= 2\sqrt{14}$$

$2 \mid 56$
$2 \mid 28$
$2 \mid 14$
7

#28

Δx: 6 Δy: $+8$

$(5,-1)$, $(11,7)$

$$d = \sqrt{(\Delta x)^2 + (\Delta y)^2}$$
$$= \sqrt{6^2 + 8^2}$$
$$= \sqrt{36+64}$$
$$= \sqrt{100}$$
$$= 10$$

MID-POINT AVERAGE x, AVERAGE y

$$\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}$$

#29 $(7\frac{1}{2}, 8)$, $(4\frac{1}{2}, 7)$

$\frac{12}{2}, \frac{15}{2}$

MP $(6, 7\frac{1}{2})$

#30 $(3,5)$, $(3,2)$

$\frac{6}{2}, \frac{7}{2}$

MP $(3, 3\frac{1}{2})$

#31 $(2,13)$, $(9,1)$

$\frac{11}{2}, \frac{14}{2}$

MP $(5\frac{1}{2}, 7)$

SLOPE $\frac{\Delta y}{\Delta x}$ (ALWAYS REPORT AS IMPROPER FRACTION)

A

Δx: -1 Δy: -10

$(3,7)$, $(2,-3)$

$$m = \frac{\Delta y}{\Delta x} = \frac{-10}{-1} = \frac{10}{1}$$

B

Δx: -8 Δy: $+9$

$(3,2)$, $(-5,11)$

$$m = \frac{\Delta y}{\Delta x} = \frac{9}{-8} = \frac{-9}{8}$$

C

Δx: $+5$ Δy: -3

$(-2,7)$, $(3,4)$

$$m = \frac{-3}{5}$$