

hw: 3.5 ± 1

$$V = \frac{4}{3}\pi r^3$$

$$2^2 = 2 \cdot 2 = 4$$

$$V = \frac{4 \cdot \pi \cdot 2^3}{3}$$

$$\frac{4 \cdot 8}{3} = \frac{32}{3}$$

$$= 10\frac{2}{3} \times 3\frac{14}{100}$$

$$V = \frac{4 \cdot \pi \cdot 8}{3}$$

$$\pi = 3.14$$

$$V = 33.50 \text{ miles}^3$$

$$\begin{array}{r} 10.67 \\ \times 3.14 \\ \hline 4268 \\ 1067 \\ \hline 33503.8 \end{array}$$

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3.5 ± 3.9

$$3.4 - \frac{1}{2}(0.76)$$

$$3.4 - .5(0.76)$$

$$3.4 - .38 = 3.02$$

$$\frac{3.020}{3.020} = 3.02$$

3.4 # 53

$$\begin{array}{r} 1017 \overline{) 5085} \\ 1017 \overline{) 5085} \\ \hline 5085 \end{array}$$

5 hours overtime

$$\begin{array}{r} 294 \overline{) 24408} \\ 294 \overline{) 24408} \\ \hline 24408 \end{array}$$

$$\begin{array}{r} 678 \\ \times 36 \\ \hline 4068 \\ 20340 \\ \hline 24408 \end{array}$$

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$$\begin{array}{r} 32 \\ \times 0 \\ \hline 3.20 \end{array}$$

$$\begin{array}{r} 2.33 \\ - .41 \\ \hline 1.92 \end{array}$$

$$\begin{array}{r} .32 \overline{) 1.92} \\ \underline{.96} \\ 32 \overline{) 192} \\ \underline{192} \\ 0 \end{array}$$

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3.6 SQUARE ROOTS AND The Pythagorean Theorem

$$10 + 4 = 14 - 4 = 10$$

$$10 \cdot 4 = 40 \div 4 = 10$$

SQUARE ROOT

$$2^3 = 2 \cdot 2 \cdot 2 = 8$$

$$5^2 = 5 \cdot 5 = 25$$

$$4^2 = 4 \cdot 4 = 16$$

$$\sqrt{25} = 5$$

$$\sqrt{16} = 4$$

$$\sqrt{9} = 3$$

$$\sqrt{121} = 11$$

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$$7\sqrt{64} \Rightarrow 7 \cdot \sqrt{64} = 7 \cdot 8 = 56$$

$$\sqrt{36} + \sqrt{4} = 6 + 2 = 8$$

$$\sqrt{\frac{36}{100}} = \frac{6}{10}$$

$$\frac{6}{10} \cdot \frac{6}{10} = \frac{36}{100}$$

$$\sqrt{81} - \sqrt{25} = 9 - 5 = 4$$

$$\sqrt{\frac{64}{121}} = \frac{8}{11}$$

$$\frac{8}{11} \cdot \frac{8}{11} = \frac{64}{121}$$

$$\begin{array}{l} 1^2 = 1 \\ 2^2 = 4 \\ 3^2 = 9 \\ 4^2 = 16 \\ 5^2 = 25 \\ 6^2 = 36 \\ 7^2 = 49 \\ 8^2 = 64 \\ 9^2 = 81 \\ 10^2 = 100 \\ 11^2 = 121 \\ 12^2 = 144 \end{array}$$

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$$\sqrt{7} = 2.645751311 \rightarrow 3\frac{1}{2} \cdot 3\frac{1}{2} = (3\frac{1}{2})^2$$

↓ irrational number

$$= 2.646$$

$$\frac{7}{2} \cdot \frac{7}{2} = \frac{49}{4}$$

$$\sqrt{12} = 3.4641016$$

$$\sqrt{9} = 3 \quad 3^2 = 9$$

$$5\sqrt{14} = 5 \cdot 3.7416573 = 3.7417$$

$$= 5 \cdot 3.7417$$

$$\begin{array}{r} 3.7417 \\ \times 5 \\ \hline 18.7085 \end{array}$$

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$\sqrt{405} + \sqrt{147}$ $\sqrt{\frac{7}{11}}$

$\sqrt[11]{\frac{6363}{10000}} \sim .636$

$$\begin{array}{r} 636 \\ 11 \overline{) 66000} \\ \underline{66} \\ 40 \\ \underline{33} \\ 70 \\ \underline{66} \\ 40 \end{array}$$

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Pythagorean Theorem
500 B.C.

RIGHT TRIANGLE

Leg. hypotenuse

$c = 10m$

$6^2 + 8^2 = c^2$
 $36 + 64 = c^2$
 $\sqrt{100} = c^2$

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

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$36 + 64 = 100 = c^2$
 $c^2 = 100$

$a^2 + b^2 = c^2$
 $5^2 + 12^2 = c^2$
 $25 + 144 = c^2$
 $169 = c^2$
 $13 = c$

$\sqrt{169} = 13$

12 ft.

5 ft.

$c = \sqrt{100}$

Pythagorean Triples
3-4-5
5-12-13

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

$16^2 + 12^2 = c^2$
 $256 + 144$
 $400 = c^2$
 $\sqrt{400} \quad 20 = c$

$20 \times 20 = 400$

$5^2 + 8^2 = c^2$
 $25 + 64 = c^2$
 $89 = c^2$
 $\sqrt{89} \quad 9.434 = c$

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TEST 3: TUES Oct. 7

Extra Credit up to 5pts: Chpt. TEST (even)

" " " " : Chpt. Review (odds)

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4.1 Ratios
(relationship between 2 numbers)

ratio of males to females

$\frac{3}{16}$

3:16 3 to 16

ratio of females to males

$\frac{16}{3}$

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$\frac{12}{16} = \frac{2 \cdot 2 \cdot 3}{2 \cdot 2 \cdot 2 \cdot 2} = \frac{3}{4}$ $\frac{2}{2} = 1$
 $\frac{348}{512} = \frac{174}{256}$
 $\frac{32}{48} = \frac{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2}{2 \cdot 3 \cdot 2 \cdot 2 \cdot 2} = \frac{2}{3}$
 Prime factorization of 48: $2 \cdot 2 \cdot 2 \cdot 2 \cdot 3$

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$\frac{3}{5} \div \frac{9}{10} = \frac{3}{5} \cdot \frac{10}{9} = \frac{2}{3}$
 1) change it to multiplication
 2) use the reciprocal of the divisor
 $\frac{2}{3} \div \frac{4}{5} = \frac{2}{3} \cdot \frac{5}{4} = \frac{5}{6}$

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$\frac{.06}{.12} = \frac{\frac{6}{100}}{\frac{12}{100}} = \frac{6}{12} = \frac{1}{2}$
 $\frac{.06 \times 100}{.12 \times 100} = \frac{6}{12} = \frac{1}{2}$
 $\frac{.132 \times 10}{.44 \times 10} = \frac{1.32}{4.4} = \frac{132}{440} = \frac{3}{10}$
 Prime factorization of 132: $2 \cdot 2 \cdot 3 \cdot 11$
 Prime factorization of 440: $2 \cdot 2 \cdot 2 \cdot 5 \cdot 11$

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$\frac{.75 \times 100}{.132 \times 100} = \frac{75}{132}$
 $\frac{75}{132} = \frac{2 \cdot 3 \cdot 5 \cdot 5}{2 \cdot 2 \cdot 3 \cdot 11} = \frac{25}{22}$
 Prime factorization of 75: $3 \cdot 5 \cdot 5$
 Prime factorization of 132: $2 \cdot 2 \cdot 3 \cdot 11$

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12 out of 16 free throws
 $\frac{12}{16} = \frac{2 \cdot 2 \cdot 3}{2 \cdot 2 \cdot 2 \cdot 2} = \frac{3}{4}$
 Solution of alcohol and water: 12 ml water, 4 ml of alcohol
 Ratio of alcohol to water: $\frac{4}{12} = \frac{1}{3}$
 Ratio of water to alcohol: $\frac{12}{4} = \frac{3}{1}$
 Ratio of water to the solution: $\frac{12}{16} = \frac{3}{4}$

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$3 \frac{4}{5} = \frac{32}{10}$
 $+ 5 \frac{3}{5} = \frac{15}{10}$
 $\frac{32}{10} + \frac{15}{10} = \frac{47}{10} = 4 \frac{7}{10}$
 $2 \frac{5}{5} = \frac{10}{5}$
 $4 \frac{3}{5} = \frac{12}{5}$
 $\frac{10}{5} + \frac{12}{5} = \frac{22}{5} = 4 \frac{2}{5}$

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$$\begin{aligned} & \cancel{7} \frac{2}{5} + \frac{5}{5} = \frac{7}{5} \\ - & 2 \frac{4}{5} = \frac{4}{5} \\ \hline & 4 \frac{3}{5} \end{aligned}$$

$$1 = \left(\frac{5}{5}\right) \frac{7}{7} \frac{42}{42}$$

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$$2\frac{2}{3} \cdot 4\frac{2}{5} = \frac{8}{3} \cdot \frac{22}{5} = \frac{176}{15} = 11\frac{11}{15}$$

$$\begin{array}{r} 11\frac{11}{15} \\ 15 \overline{) 176} \\ \underline{15} \\ 26 \\ \underline{15} \\ 11 \end{array}$$

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