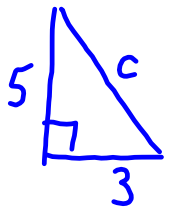
HOMEWORK QUESTIONS???
(page 211, #3 TO #5, #7, #8, #10 and #12 TO #14)

#13.



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

$= 5^2 + 3^2$

$= 25 + 9$

$= 34$

$c = \sqrt{34}$

$\doteq 5.8$

$3\sqrt{2}$ Mixed Radical

$\sqrt{18}$ Entire Radical

Entire Radical $\longrightarrow$ Mixed Radical

$\sqrt{18} = \sqrt{9} \times \sqrt{2}$

$= 3\sqrt{2}$

$\sqrt{75} = \sqrt{25} \times \sqrt{3}$

$= 5\sqrt{3}$

$\sqrt{162} = \sqrt{9} \times \sqrt{18}$

$\sqrt{81} \times \sqrt{2} = 3 \times \sqrt{9} \times \sqrt{2}$

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

$\sqrt[3]{32} = \sqrt[3]{8} \times \sqrt[3]{4}$

$= 2\sqrt[3]{4}$

$\sqrt[3]{54} = \sqrt[3]{27 \times 2}$

$= 3\sqrt[3]{2}$

$\sqrt{160} = \sqrt{16} \times \sqrt{10}$

$= 4\sqrt{10}$

$\sqrt{4} \times \sqrt{40}$

$2\sqrt{40}$

$2\sqrt{4} \times \sqrt{10}$

$4\sqrt{10}$

$\sqrt[3]{1080} = 108 \times 10$

$4 \times 27 \times 2 \times 5$

$2 \times 2 \times 3 \times 9 \times 2 \times 5$

$2 \times 2 \times 3 \times 3 \times 3 \times 2 \times 5$

need 3 of something

$3 \times 2\sqrt{5}$

$6\sqrt{5}$

$\sqrt{36} = \sqrt{6} \times \sqrt{6}$

$= 6$

$\sqrt{49} = \sqrt{7} \times \sqrt{7}$

$= 7$

$\sqrt[3]{1080} = \sqrt[3]{216 \times 5}$

$= 6\sqrt[3]{5}$

$\sqrt[3]{56} = \sqrt[3]{8 \times 7}$

$= 2\sqrt{7}$

$\sqrt[3]{56} = \sqrt[3]{2 \times 28}$

$2 \quad 4 \times 7$

$2 \times 2 \times 2 \times 7$

$2\sqrt{7}$

$\sqrt{36} = \sqrt{6 \times 6}$

$= 6$

$\sqrt{2 \times 18}$

$2 \quad 2 \times 9$

$\sqrt{2 \times 2 \times 3 \times 3}$

2×3

$= 6$

Mixed Radicals → Entire Radicals

$5\sqrt{2} = \sqrt{5\times5\times2}$

$= \sqrt{50}$

$7\sqrt{13} = \sqrt{7\times7\times7\times13}$

$= \sqrt{4459}$

$3\sqrt{5} = \sqrt{3\times3\times5}$

$= \sqrt{45}$

$\sqrt{a} = a^{\frac{1}{2}}$

$\sqrt[3]{n} = n^{\frac{1}{3}}$ ^ $\sqrt[3]{8} = 8\wedge(1/3)$

$= 2$

$\sqrt{37} = 37\wedge.5$

$= 6.1$

8. POWERS WITH RATIONAL EXPONENTS WITH A NUMERATOR OF 1:

$$x^{\frac{1}{n}} = \sqrt[n]{x}$$

EX.:

$$8^{\frac{1}{3}}$$
$$= \sqrt[3]{8}$$
$$= 2$$

WE CAN ALSO USED PRIME FACTORIZATION TO SIMPLIFY A RADICAL.

$2^3 = 8$
$3^3 = 27$
$4^3 = 64$

1^4	1
2^4	16
3^4	81

EX.: Simplify each radical.

4
9
16

a) $\sqrt{80} = \sqrt{4} \times \sqrt{20}$
$= \sqrt{4} \times \sqrt{4} \times \sqrt{5}$
$= 4\sqrt{5}$

$\sqrt{16} \times \sqrt{5}$

b) $\sqrt[3]{144} = \sqrt[3]{8} \times \sqrt[3]{18}$
$= 2\sqrt[3]{18}$

c) $\sqrt[4]{162}$
$\sqrt[4]{81} \times \sqrt[4]{2}$
$3\sqrt[4]{2}$

YOU TRY!

$2^4 = 16$
$3^4 = 81$

EX.: Simplify each radical.

$2^2 = 4$
$3^2 = 9$
$4^2 = 16$

$2^3 = 8$
$3^3 = 27$

a) $\sqrt{63}$

$\sqrt{9} \times \sqrt{7}$

$3\sqrt{7}$

$\sqrt{3 \times 21}$

$\sqrt{3 \times 3 \times 7}$

b) $\sqrt[3]{108}$

$\sqrt[3]{27 \times 4}$

$3\sqrt[3]{4}$

c) $\sqrt[4]{128}$

$\sqrt[4]{16 \times 8}$

$2\sqrt[4]{8}$

LET'S TRY TO SIMPLIFY RADICALS WITHOUT USING PRIME FACTORIZATION, IF POSSIBLE.

EX.: Write each radical in simplest form, if possible.

a) $\sqrt[3]{40}$

$\sqrt[3]{8 \times 5}$

$2\sqrt[3]{5}$

b) $\sqrt{26}$

c) $\sqrt[4]{32}$

$\sqrt[4]{16 \times 2}$

$2\sqrt[4]{2}$

YOU TRY TO SIMPLIFY RADICALS WITHOUT USING PRIME FACTORIZATION, IF POSSIBLE.

EX.: Write each radical in simplest form, if possible.

$2^2=4$ $3^2=9$ $4^2=16$ $5^2=25$ $2^3=8$ $3^3=27$ $2^4=16$ $3^4=81$

a) $\sqrt{30}$ → $\sqrt{30}$

b) $\sqrt[3]{32}$ → $\sqrt[3]{8\times4}$ → $2\sqrt[3]{4}$

c) $\sqrt[4]{48}$ → $\sqrt[4]{16\times3}$ → $2\sqrt[4]{3}$

WRITING MIXED RADICALS AS ENTIRE RADICALS:

EX.: Write each mixed radical as an entire radical.

a) $4\sqrt{3}$ → $\sqrt{4\times4\times3}$ → $=\sqrt{48}$

b) $3\sqrt[3]{2}$ → $\sqrt[3]{3\times3\times3\times2}$ → $\sqrt[3]{54}$

c) $2\sqrt[5]{2}$ → $\sqrt[5]{2\times2\times2\times2\times2\times2}$ → $\sqrt[5]{64}$

CONCEPT REINFORCEMENT:

FPCM 10:

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