Warm Up (5 min) – yes it's a short one

We don't waste time on the path to success

1. $x^3 \bullet x^5 =$

2. $(x^3)^5 =$

3. $2^3 \bullet 2^{-6} =$

4. $\frac{1}{3} + \frac{3}{6} =$

5. $\frac{3}{5} \bullet \frac{4}{3} =$

$x^3 \bullet x^5 = X^{3+5} = X^8$

$X \cdot X \cdot X \; X \cdot X \cdot X \cdot X \cdot X = X^8$

$(x^3)^5 = X^{3 \cdot 5} = X^{15}$

$X^3 \cdot X^3 \cdot X^3 \cdot X^3 \cdot X^3 = X^{3+3+3+3+3} = X^{15}$

$2^3 \bullet 2^{-6} = 2^{3+-6} = 2^{3-6} = 2^{-3} = \frac{1}{2^3}$

$\frac{2^3}{2^6}$

$\frac{2 \cdot 2 \cdot 2}{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2} = \frac{1}{2^3}$

$\frac{1}{3} + \frac{3}{6} = \frac{6 \cdot 1}{6 \cdot 3} + \frac{3}{6} \frac{\cdot 3}{\cdot 3} = \frac{6}{18} + \frac{9}{18} = \frac{17}{18}$

$\frac{3}{5} \bullet \frac{4}{3} = \frac{12}{15} \frac{\div 3}{\div 3} \frac{4}{5}$

u1d8 **NOTES**

MUST BE ORGANIZED FOR THE TEST

Index:

UNIT 1

Adding/Subtracting Fractions

$$\frac{1}{4}+\frac{1}{2} = \frac{2}{2}\cdot\frac{1}{4}+\frac{1}{2}\cdot\frac{4}{4} = \frac{2}{8}+\frac{4}{8} = \frac{6}{8}$$

$$\frac{6\div 2}{8\div 2} = \frac{3}{4}$$

$$\frac{1}{5}+4=\frac{1}{5}+\frac{4}{1}=\frac{1\cdot1}{1\cdot5}+\frac{4\cdot5}{1\cdot5}=\frac{1}{5}+\frac{20}{5}=\frac{21}{5}$$

$$\frac{21}{5}=\frac{20}{5}+\frac{1}{5}=4\frac{1}{5}$$

$$\frac{1}{3}+\frac{3}{4}=\frac{4\cdot1}{4\cdot3}+\frac{3\cdot3}{4\cdot3}=\frac{4}{12}+\frac{9}{12}=\frac{13}{12}$$

$$\frac{13}{12}=\frac{12}{12}+\frac{1}{12}=1\frac{1}{12}$$

Multiplying Fractions

$$\frac{2}{3}\bullet\frac{4}{7}=\frac{8}{21}$$

$$\frac{2}{3} \bullet \frac{3}{4} = \frac{6}{12} = \frac{3}{4}$$

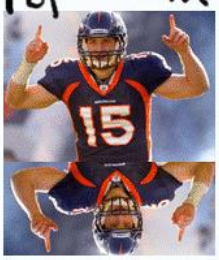
$$\frac{2}{7} \bullet \frac{7}{3} = \frac{14}{21} = \frac{2}{3}$$

$$\frac{1}{5} \bullet 3 = \frac{1}{5} \cdot \frac{3}{1} = \frac{3}{5}$$

T.I.B.O.

Top In
Bottom Out

Top In

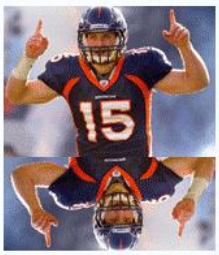


Bottom Out

$$Base^{\frac{top}{bottom}} = \sqrt[bot]{Base^{top}}$$

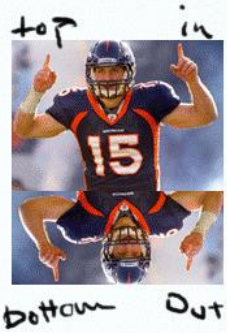
Ex) $4^{\frac{1}{2}} = \sqrt[2]{4^1} = \sqrt{4} = 2$

$6^{\frac{1}{2}} = \sqrt[2]{6^1} = \sqrt{6}$



$4^{\frac{3}{2}} = \sqrt[2]{4^3} = \sqrt[2]{4 \cdot 4 \cdot 4} = \sqrt{64} = 8$

$9^{\frac{1}{2}} = \sqrt[2]{9^1} = \sqrt{9} = 3$



$5^{\frac{2}{2}} = \sqrt[2]{5^2} = \sqrt[2]{5 \cdot 5} = \sqrt{25} = 5$

Unpacking Roots

This two says look for groups of two

$\sqrt{24} = \sqrt[2]{2 \cdot 2 \cdot 2 \cdot 3} = \sqrt[2]{2 \cdot 2} \cdot \sqrt[2]{2 \cdot 3}$

$\sqrt[2]{4} \sqrt[2]{6}$

$2 \cdot \sqrt[2]{6}$

$2 \cdot 12$

$2 \cdot 4 \cdot 3$

$2 \cdot 2 \cdot 2 \cdot 3$

Unpacking Roots

$\sqrt{20} = \sqrt[2]{2 \cdot 2 \cdot 5} = \sqrt[2]{2 \cdot 2} \cdot \sqrt[2]{5} = 2\sqrt[2]{5}$

$2 \cdot 10$

$2 \cdot 2 \cdot 5$

Unpacking Roots

$\sqrt{40} = \sqrt[2]{2 \cdot 2 \cdot 2 \cdot 5} = \sqrt[3]{2 \cdot 2} \cdot \sqrt[3]{2 \cdot 5}$

$2 \cdot \sqrt[3]{10}$

$4 \cdot 10$

$2 \cdot 2 \cdot 2 \cdot 5$

Alternative Roots

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

Alternative Roots

$\sqrt[5]{64} = \sqrt[5]{2\cdot2\cdot2\cdot2\cdot2\cdot2} = \sqrt[5]{2^5}\cdot\sqrt[5]{2}$

$2\sqrt[5]{2}$

$2\cdot32$

$2\cdot2\cdot16$

$2\cdot2\cdot4\cdot4$

$2\cdot2\cdot2\cdot2\cdot2\cdot2$

Unpacking Alternative Roots

$\sqrt[3]{24} = \sqrt[3]{2\cdot2\cdot2\cdot3} = \sqrt[3]{2\cdot2\cdot2}\cdot\sqrt[3]{3}$

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

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

$8\cdot3$

$2\cdot4\cdot3$

$2\cdot2\cdot2\cdot3$

Like Terms

$5\sqrt{3} + 3\sqrt{5} - 3\sqrt{3}$

$5\sqrt{3} - 3\sqrt{3} + 3\sqrt{5}$

$2\sqrt{3} + 3\sqrt{5}$

Like Terms

$6\sqrt{5} + 3\sqrt{8} - 6\sqrt{8} + 2\sqrt{5}$

$6\sqrt{5} + 2\sqrt{5} + 3\sqrt{8} - 6\sqrt{8}$

$8\sqrt{5} - 3\sqrt{8}$

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