

MULTIPLICATIVE THINKING – SET 8 – PART 1

(A) Can use estimation before solving a problem.

$$7.5 \times 197 \rightarrow 7.5 \times 200 = 1500$$

$$30\% \text{ of } 1065 \rightarrow 30\% \text{ of } 1000 = 300$$

(b) Complex Cross Products Multiplication

$$301 \times 64.5 =$$

| | | 100s | 10s | 1s |
|------|------------|------------|-----------|----------|
| x | | 300 | 00 | 1 |
| 10s | 60 | 18,000 | 0 | 60 |
| 1s | 4 | 1,200 | 0 | 4 |
| 0.1s | 0.5 | 150 | 0 | 0.5 |

$$18,000 + 1,200 + 150 + 0 + 0 + 0 + 60 + 4 + 0.5 = 19,414.5$$

$$301 \times 64.5 = 19,414.5$$

(c) Long Division

$$945 \div 7 \frac{1}{2} =$$

Move decimal place first $7.5 \overline{) 945.0}$

1 lot of 75 in 94
94 – 75, then drop the 5

2 lots of 75 in 195 = 150
195 – 150, then drop the 0

6 lots of 75 in 450
This leaves a remainder of 0

$$945 \div 7.5 = 126$$

(D) Know how integers multiply and divide.

Two positive ++

$$(+) \times (+) = (+)$$

$$(+) \div (+) = (+)$$

$$5 \times 8 =$$

$$(+9) \div (+3) =$$

Two negative --

$$(-) \times (-) = (+)$$

$$(-) \div (-) = (+)$$

$$(-3) \times (-2) =$$

$$-24 \div -6 =$$

One positive one negative +-

$$(+) \times (-) = (-)$$

$$(+) \div (-) = (-)$$

$$(+8) \times (-10) =$$

$$56 \div -7 =$$

$$(-) \times (+) = (-)$$

$$(-) \div (+) = (-)$$

$$-5 \times 9 =$$

$$(-18) \div (+3) =$$

(e) Solve complex two step problems
Whole Numbers

$$8 \times 3 \times ? = 480$$

Inverse one number and solve $480 \div 8 = 60$

Write new equation $3 \times ? = 60$

Inverse other number and solve $60 \div 3 = \underline{20}$

$$8 \times 3 \times \underline{20} = 480$$

$$\underline{8} \times 82 \div \underline{2} =$$

Solve 2 easy numbers $\underline{8} \div \underline{2} = 4$

Multiply the third number $4 \times 82 = 328$

$$8 \times 82 \div 2 = 328$$

(F) Solve complex two step problems
Integers

$$5 \times 4 \times -8 =$$

Multiply whole numbers $5 \times 4 = 20$

Multiply integer $20 \times -8 = -160$

$$-15 \times -8 \div 4 =$$

Multiply first two numbers $-15 \times -8 = 120$

Divide third number $120 \div 4 = 30$

$$-15 \times -8 \div 4 = 30$$

MULTIPLICATIVE THINKING – SET 8 – PART 2

G Know Common Fraction, Percentage and Decimal Conversions.

Decimal /Fraction

$$0.8 = \frac{4}{5}$$

$$0.5 = \frac{1}{2}$$

$$1/10 = 0.1$$

$$\frac{3}{4} = 0.75$$

Fraction / Percentage

$$3/10 = 30\%$$

$$\frac{1}{4} = 25\%$$

$$50\% = \frac{1}{2}$$

$$40\% = \frac{2}{5}$$

Percentage/ Decimal

$$50\% = 0.5$$

$$90\% = 0.9$$

$$0.25 = 25\%$$

$$0.6 = 60\%$$

H Solve complex two step problems **Percentages**

\$12 x 470 with 25% off

Find 25% of 12 $\$12 \div 4 = \3

Find 75% of 12 $\$12 - \$3 = \$9$

Multiply answer by 470 $\$9 \times 470 = \4230

\$25 x 20% discount, less 10% of the discounted price, how much is it?

Remove 20% by multiply by 0.8 $\$25 \times 0.8 = \20

Remove 10% by multiply by 0.9 $\$20 \times 0.9 = \18

$$(\$25 - 20\%) - 10\% = \$18$$

I Solve complex two step problems **Fractions**

$$120 \times \frac{2}{3} \times ? = 20$$

Find $\frac{2}{3}$ $120 \times \frac{2}{3} = 80$

Find the unknown $80 \times ? = 20$

$$80 \times \frac{1}{4} = 20$$

$$75 \times \frac{4}{5} \times \frac{1}{2} =$$

Find $\frac{1}{5}$ $75 \times 5 = 15$

Multiply to find $\frac{4}{5}$ s $15 \times 4 = 60$

Find half $60 \div 2 = 30$

J Solve complex two step problems **Decimal**

$$40 \times 0.7 \div ? = 56$$

$$0.7 \times 10 = 7 \quad 40 \times 7 = 280$$

$$\text{Answer} \div 10 \quad 40 \times 0.7 = 28$$

$$\text{Find unknown} \quad 28 \div ? = 56$$

$$28 \div 0.5 = 56$$

$$81 \div 1.5 \times 5 =$$

Double 1.5 to make whole $81 \div 3 = 26$

$$\text{Double answer} \quad 52 \times 2 = 52$$

$$\text{Multiply by 5} \quad 52 \times 5 = 260$$

$$81 \div 1.5 \times 5 = 260$$

K Solve complex two step problems **Mixed types to numbers.**

200 less 40% , $\frac{2}{3}$ of the result

Remove 40% by $\times 0.6$ $200 \times 0.6 = 120$

Divide by denominator $\frac{1}{3}$ of 120 = 40

Multiply by numerator $\frac{2}{3}$ of 120 = 80

$$(200 - 40\%) \times \frac{2}{3} = 80$$

$$104 \times \frac{1}{4} \times -3 =$$

Divide by denominator $104 \div 4 = 26$

Multiply negative integer $26 \times -3 = -78$

$$104 \times \frac{1}{4} \times -3 = 78$$