MULTIPLICATION AND DIVISION

FACT 1: The orders of multiplication and division are interchangeable. Therefore, they may simply be carried out from left to right.

$20 \div 5 \times 8 \div 4 = 4 \times 8 \div 4 = 32 \div 4 = 8$
$18 \div 6 \times 14 \div 7 = 3 \times 14 \div 7 = 42 \div 7 = 6$

FACT 2: The "no sign" in front of the first number is actually a "multiplication" sign. This can be seen by multiplying by 1, which does not change the sum.

$6 \times 2 = 1 \times 6 \times 2$
$6 \div 2 = 1 \times 6 \div 2$

FACT 3: The numbers may be moved around, but only with their operation signs in front of them.

$6 \times 2 = 1 \times 6 \times 2 = 1 \times 2 \times 6 = 2 \times 6$
$6 \div 2 = 1 \times 6 \div 2 = 1 \div 2 \times 6 = \frac{1}{2} \times 6$

NOTE: $2 = 1 \times 2$; and $\frac{1}{2} = 1 \div 2$

FACT 4: The numbers with the same operation may be gathered first. The products of dividends and divisors may be separated by a line in the form of a fraction.

(a) $6 \times 8 \div 4 \div 3 = \frac{6 \times 8}{4 \times 3}$

(b) $40 \div 5 \times 8 \div 4 = \frac{40 \times 8}{5 \times 4}$

(c) $18 \div 7 \div 9 \times 14 = \frac{18 \times 14}{7 \times 9}$

FACT 5: Same numbers with opposite signs ratio up to one. They may simply be canceled out.

$7 / 7 = 1$; $8 / 8 = 1$; therefore,

$$8 \div 7 \times 5 \div 8 \times 7 = \frac{8 \times 5 \times 7}{7 \times 8} = \frac{\cancel{8} \times 5 \times \cancel{7}}{\cancel{8} \times \cancel{7}} = 5$$

1. **Compute the following.**
   (a) $6 \times 16 \times 5 \div 5 \div 6 \div 8$
   (b) $21 \div 8 \times 2 \div 21 \times 8$
   (c) $13 \div 2 \div 5 \div 13 \times 10$
   (d) $8 \times 23 \times 15 \div 5 \div 23 \div 8$
   (e) $17 \div 8 \times 5 \div 17 \times 8$
   (f) $24 \div 8 \div 2 \div 24 \times 32$

Check your answers:
(a) 2 (b) 2 (c) 1 (d) 3 (e) 5 (f) 2

End of Lesson