

Good Habits!

#1: WRITE BIG!!!

Horizontally: long negative signs...

Vertically: tall fractions and exponents

Place a zero before decimal points, like: 0.5

#2: CHECK YOUR WORK!

Every 3 lines, go back and make sure you would do the same thing again!

Read the question again: answer the question.

Know Your Multiplication Tables!

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|
| 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 2 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 |
| 3 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 |
| 4 | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 |
| 5 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
| 6 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 | 72 |
| 7 | 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 | 77 | 84 |
| 8 | 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 | 88 | 96 |
| 9 | 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90 | 99 | 108 |
| 10 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| 11 | 11 | 22 | 33 | 44 | 55 | 66 | 77 | 88 | 99 | 110 | 121 | 132 |
| 12 | 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | 132 | 144 |

*Be able to count by 2's (odds, or evens), 3's, 5's, 9's, 10's...

**Memorize the perfect squares; they are your friends!

Divisibility Tests

1: Duh!

2: Goes into *any* even number.

3: SDS* divisible by 3.

4: Divisible by 2, twice.

5: Ends in 5 or 0.

6: Even, & SDS divisible by 3.

7: Long division (sorry).

8: Divisible by 2, three times.

9: SDS *is* 9.

10: Ends in 0.

*Single Digit Sum: add single digits of any number together, repeat until a single digit is reached.

Prime Numbers*

There are exactly 10 prime numbers between 0 and 30:

2, 3, 5, 7, 11, 13,
17, 19, 23, 29

A "Prime number" is a number that has exactly 2 unique factors; therefore 1 is not a prime number. Also, 2 is the only even prime number.

*Prime numbers tell us when we can STOP factoring!

Real Numbers (R)

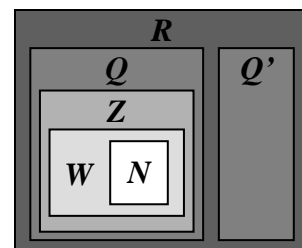
N NATURAL numbers - numbers used *naturally* in counting: 1, 2, 3,...

W WHOLE numbers - natural numbers and zero: 0, 1, 2, 3,...

Z INTEGERS - whole numbers and their negatives: ...-2, -1, 0, 1, 2,...

Q RATIONAL numbers - ratios of integers; always have terminating or repeating decimals: $\frac{1}{2}$, $-\frac{2}{3} = 0.5$, $-0.\underline{666}$

Q' IRRATIONAL numbers - all other real numbers; always have non-terminating and non-repeating decimals: π , e , $\sqrt{2}$, ...



FRACTIONS:

division problems you don't have to do!

Adding

To add fractions all you need is a common denominator.

$$\frac{2}{3} + \frac{4}{5} = \frac{5 \cdot 2}{5 \cdot 3} + \frac{4 \cdot 3}{5 \cdot 3} = \frac{10}{15} + \frac{12}{15} = \frac{22}{15} \leftarrow \text{in order to add, we must multiply!} \rightarrow \frac{2}{3} \rightarrow \frac{4}{5} = \frac{8}{15}$$

because what you're given guarantees a common denominator every time.

*to subtract, add a negative.

Multiplying

To multiply fractions you don't even need that!

You just need to be good at your multiplication tables!

*to divide, invert (flip) and multiply.

DECIMALS

| | | |
|-----|---|--------------|
| 1/2 | = | 0.5 |
| 1/3 | = | 0.33 |
| 2/3 | = | 0. <u>66</u> |
| 1/4 | = | 0.25 |
| 3/4 | = | 0.75 |
| 1/5 | = | 0.2 |
| 2/5 | = | 0.4 |
| 3/5 | = | 0.6 |
| 4/5 | = | 0.8 |
| 1/8 | = | 0.125 |
| 3/8 | = | 0.375 |
| 5/8 | = | 0.625 |
| 7/8 | = | 0.875 |