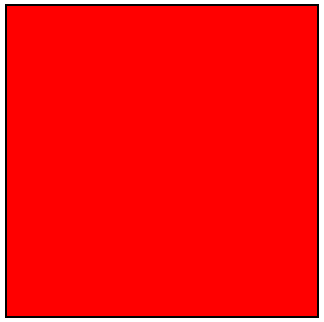
square root

$16 = 4^2 = 4 \times 4$

square root = 4



square root = 15

radical $\sqrt{\ }$

$\sqrt{16} = \sqrt{4^2} = \sqrt{4 \times 4}$

$\sqrt{16} = 4$

$\sqrt{36} = \sqrt{6^2} = \sqrt{6 \times 6}$

$\sqrt{36} = 6$

rational

-6

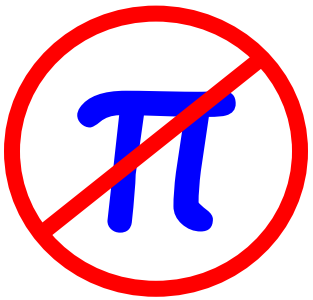
2.125

$\frac{1}{3}$

0.007

1235439.2581

$\frac{2}{9}$



irrational

$\sqrt{2}$

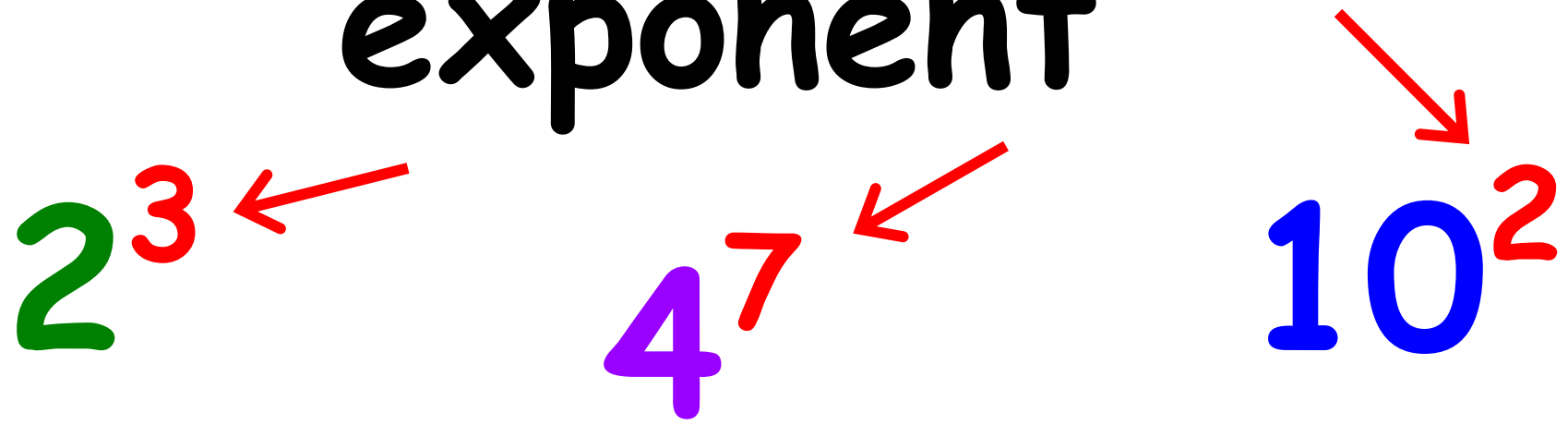
Golden Ratio

$1.61803\ldots$

π

$\sqrt{3}$

exponent



additive inverse

$7 \rightarrow -7$

$7 + -7 = 0$

$-3 \rightarrow 3$

$-3 + 3 = 0$

multiplicative inverse

$2 \to \frac{1}{2}$

$\frac{1}{4} \to 4$

$\frac{3}{5} \to \frac{5}{3}$

$x \to \frac{1}{x}$

$0.126936 = 1.26936 \cdot 10^{-2}$

scientific notation

$693618 = 6.93618 \cdot 10^{5}$

$6936 = 6.936 \cdot 10^{3}$

significant digits

Number	Significant Digits
23.61	4
2.361	4
2.3610	5
236,100	4
236,100.	6
$2.3610 \bullet 10^5$	5

inequality

$3 < 5$

$x \geq 1$

$6 > -12$

$<, \leq, >, \geq$

$a + 2 \leq -5$

sequence

3, 5, 7, 9, 11, … 10, 9, 8, 7, 6, -5, …

0, -5, -10, -15, -20, …

arithmetic sequence

3, 7, 11, 15, 19 -2, -7, -12, -17, -22

12, 7, 2, -3, -8, -13, -18

recursive

Fibonacci Sequence

(1, 1, 2, 3, 5, 8, …)

$F_n = F_{n-1} + F_{n-2}$

$F_1 = F_2 = 1$

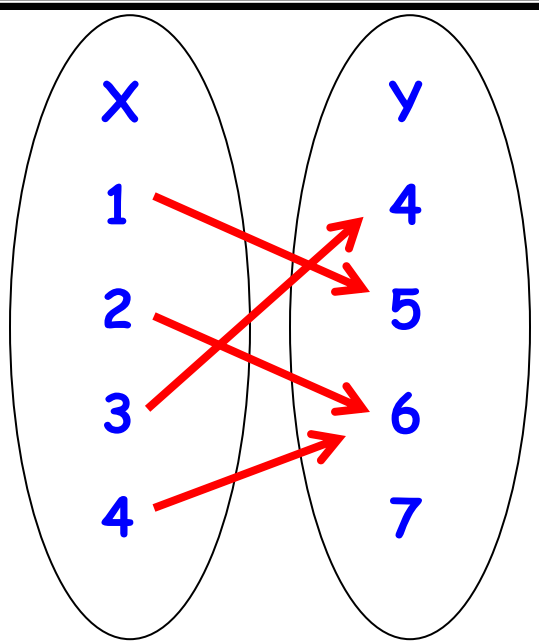
Factorial

$n! = n(n-1)!$

$= n(n-1)(n-2)\ldots 1$

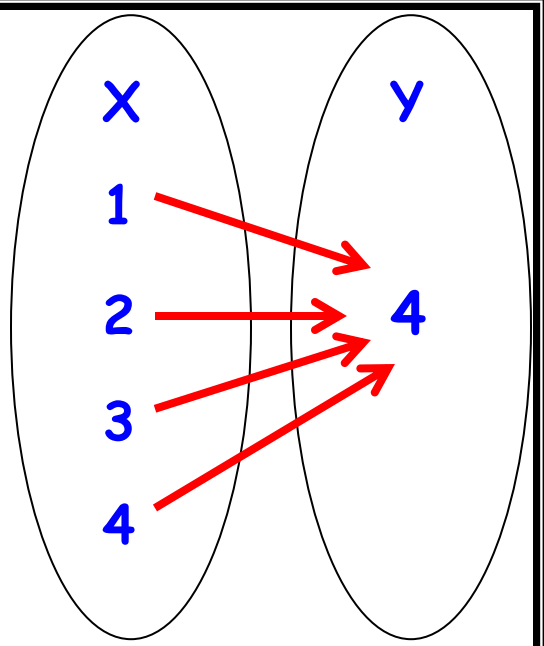
$4! = 4(3)(2)(1)$

function



$y = 2x$

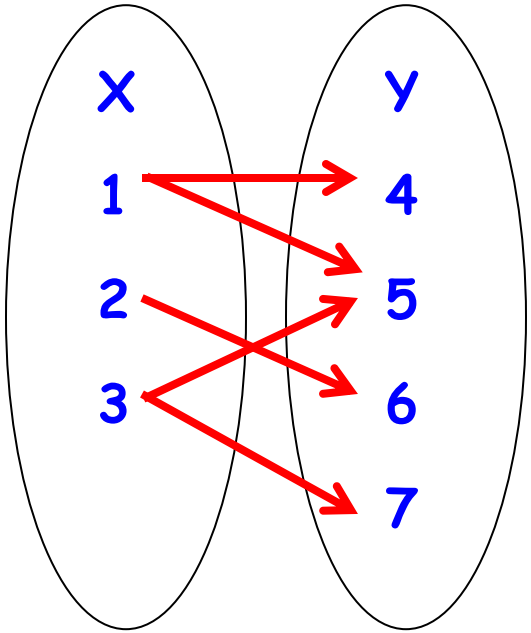
$y = 6x - 3$



linear function

$y = 4x + 8$ $y = 3x$ $y = 6x - 3$

$y = 6x - 3$ $y = -4x$ $y = -2x - 6$



relation

{(2, -6), (1, 4), (2, 4),
(0, 0), (1, -6), (3, 0)}

X	y
3	4
7	2
0	-1
-2	2
5	0
3	3

rate of change

$$\frac{3 \text{ ft}}{1 \text{ sec}} \qquad 3 \text{ ft/sec}$$

	Time (sec)	Distance (ft)	
1 sec	1	3	3 ft
1 sec	2	6	3 ft
1 sec	3	9	3 ft
1 sec	4	12	3 ft
1 sec	5	15	3 ft

slope

$$\frac{\text{difference in y's}}{\text{difference in x's}}$$

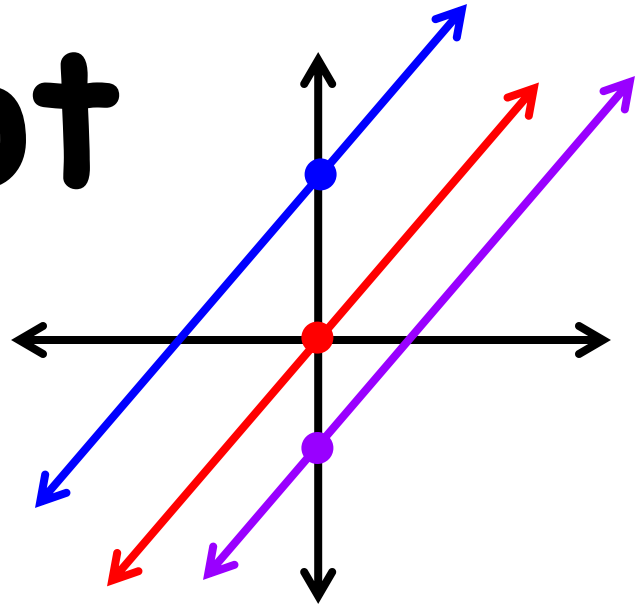
$$\frac{\text{rise}}{\text{run}}$$

$y = 3x + 4$

intercept

y-intercept

$y = 3x + 4$



linear equality

$y = 2x + 3$

$y = \frac{1}{2}x - 5$

$y = 3$

$y = 4x + 10$

$y = \frac{3}{4}b$

linear inequality

$y < 5x$

$y \geq 3x - 5$

$y \leq 4x + 10$

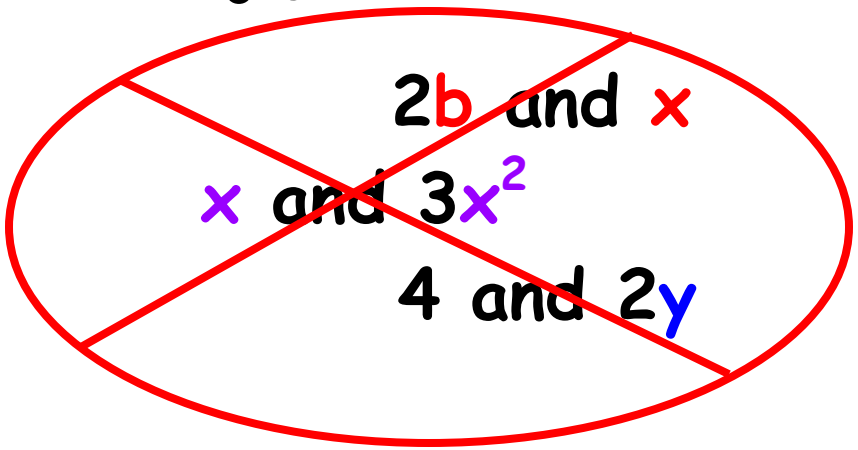
$y > 2x + 4$

like terms

$2x$ and x

x^2 and $3x^2$

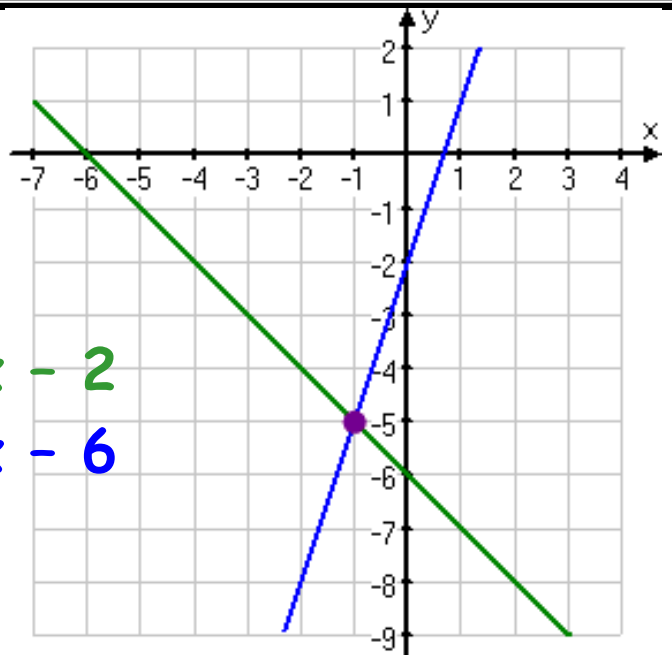
$3y$ and $6y$



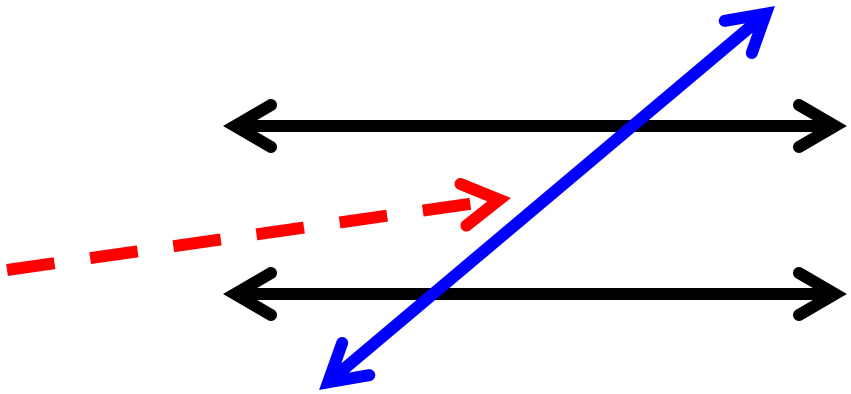
system of linear equations

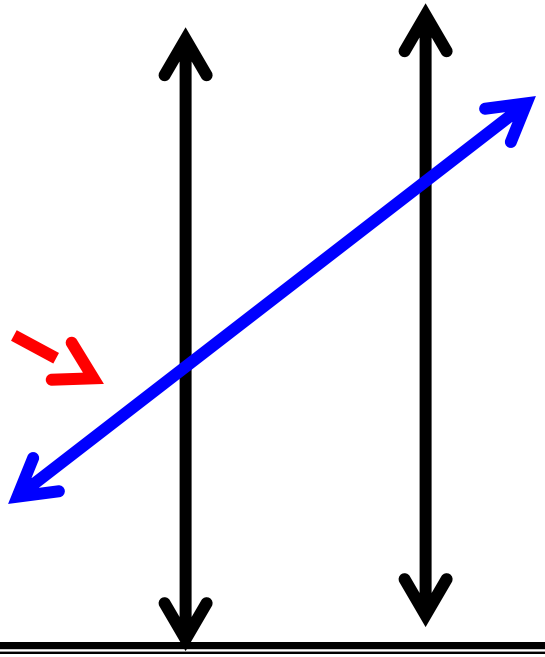
$y = 3x - 2$

$y = -x - 6$

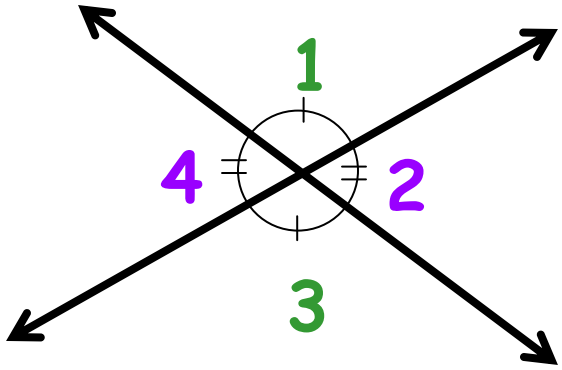


transversal





vertical angles



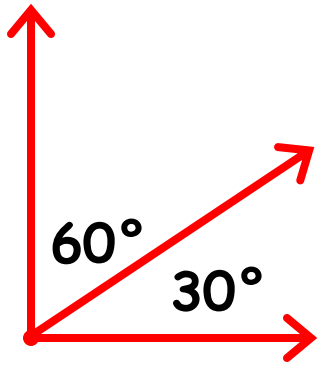
Angles 1 and 3

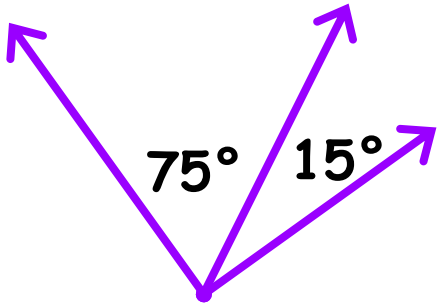
$m\angle 1 = m\angle 3$

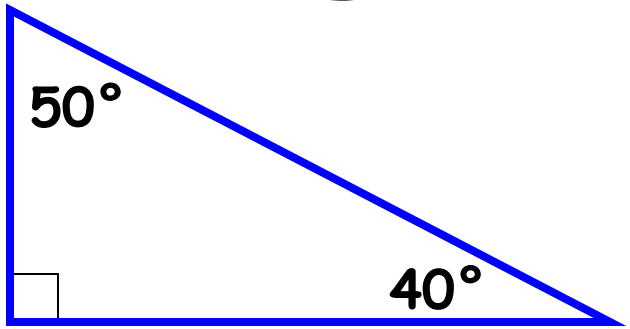
Angles 2 and 4

$m\angle 2 = m\angle 4$

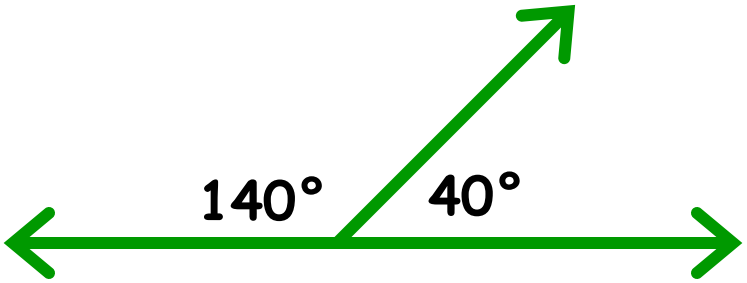
complementary angles

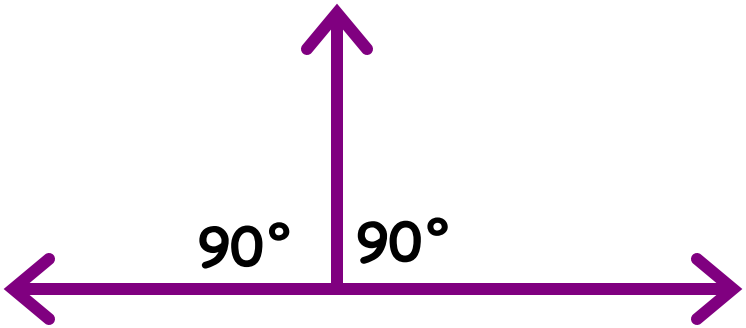




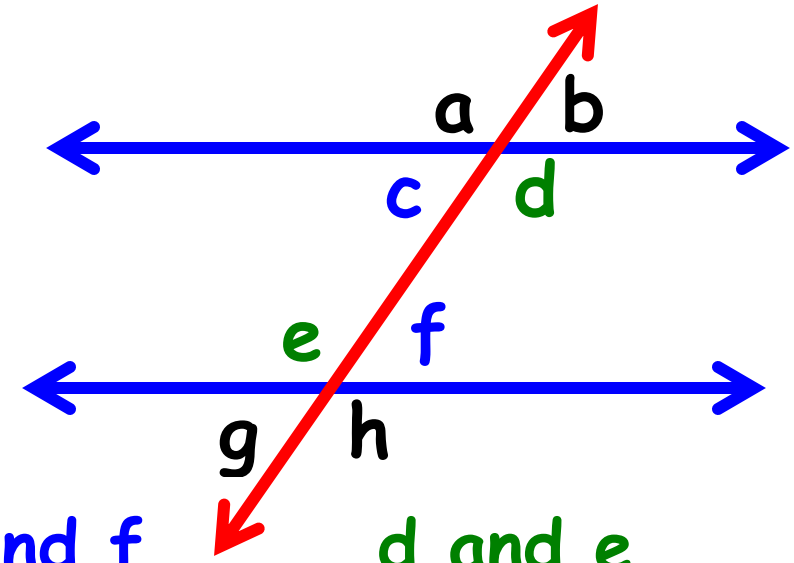


supplementary angles



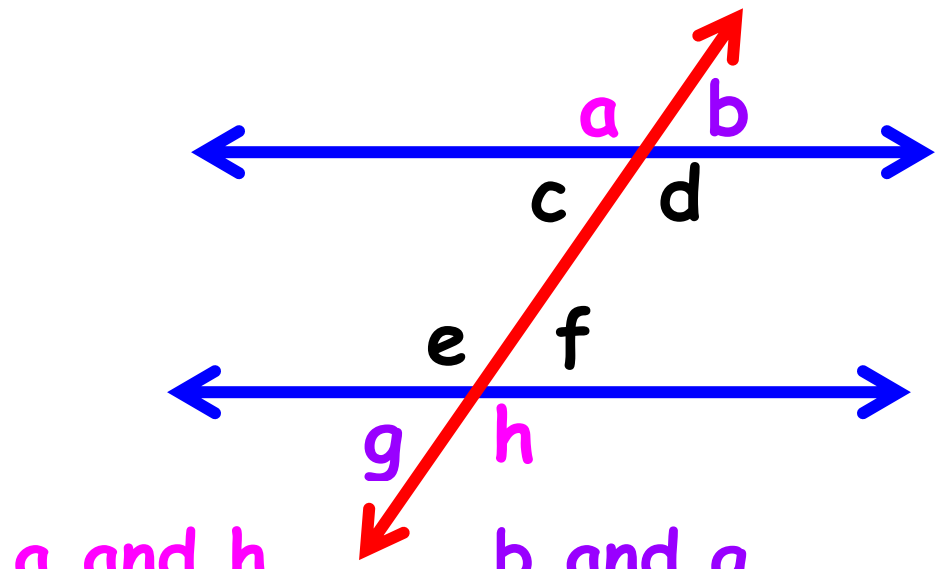


alternate interior angles



c and f

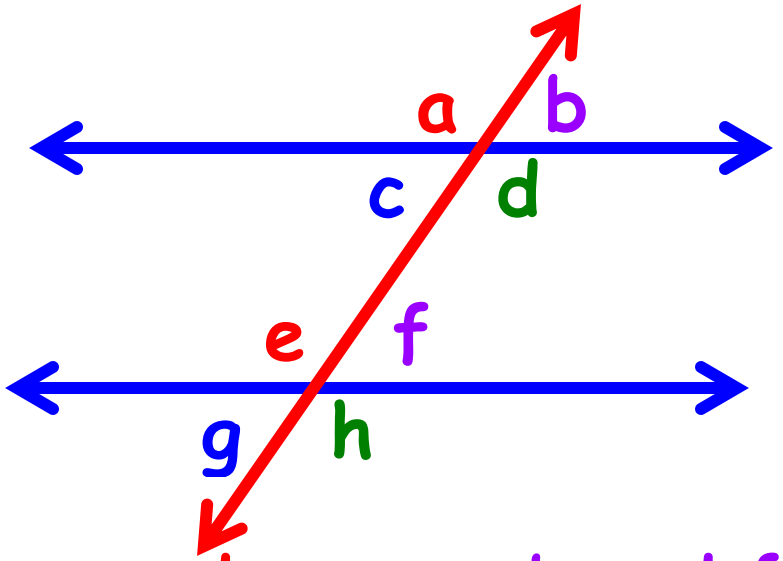
d and e



alternate exterior angles

a and h

b and g



corresponding angles

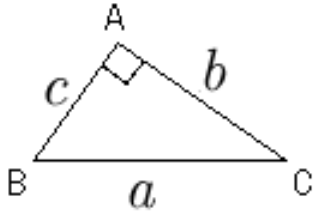
a and e

b and f

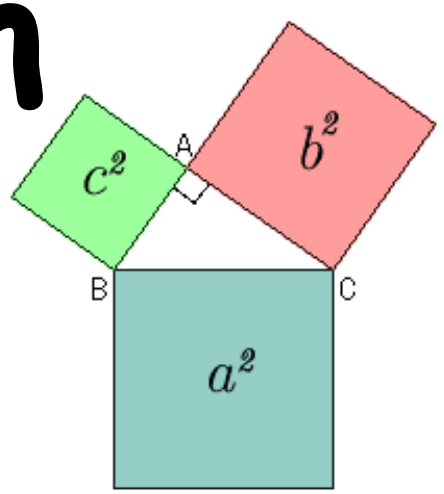
c and g

d and h

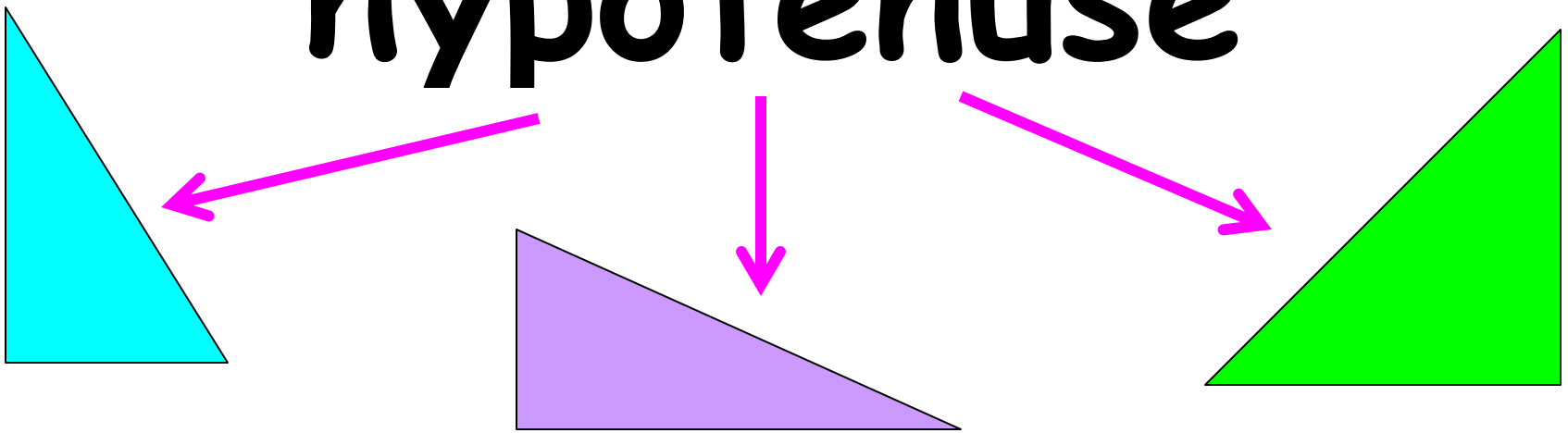
Pythagorean Theorem



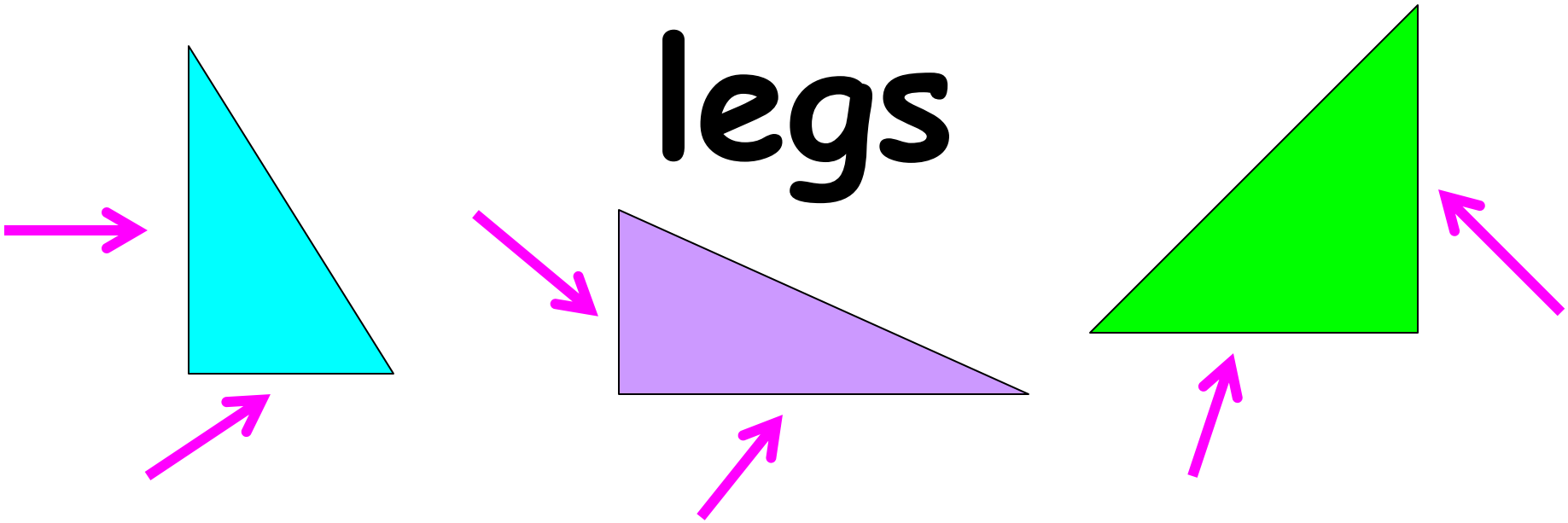
$$a^2 = b^2 + c^2$$



hypotenuse



legs



set { }

B = {2, 4, 6, 8, 10}

X = {a, b, c, d, e}

Z = {dog, cat, fish, turtle}

element $\in$

$B = \{2, 4, 6, 8, 10, \ldots 50\}$

$4 \in B$

$X = \{a, b, c, d, e\}$

$b \in X$

$Z = \{dog, cat, fish, turtle\}$

$dog \in Z$

subset $\subset$

$A = \{4, 6, 12, 48\}$

$B = \{2, 4, 6, 8, 10, \ldots 50\}$

$C = \{-3, -1, 5, 11, 12\}$

$D = \{\text{all integers} < 100\}$

$A \subset B$

$A \subset D$

$B \subset D$

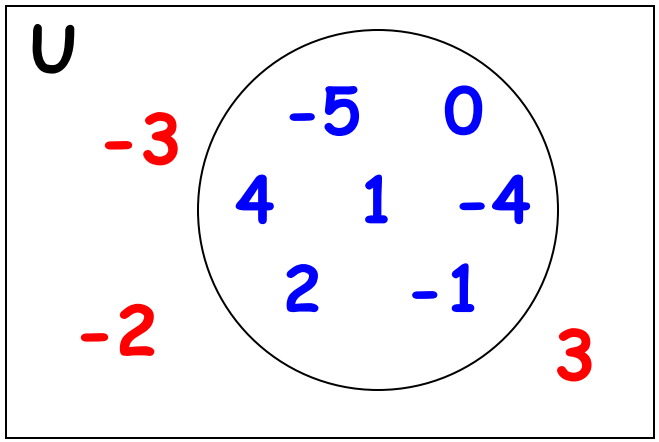
$C \subset D$

complement of a set

U = {all integers x: $-5 \leq x \leq 5$}

A = {-5, -4, -1, 0, 1, 2, 4}

A' = {-3, -2, 3}



intersection ∩

A = {4, 6, 12, 48}

B = {2, 4, 6, 8, 10, …50}

C = {-3, -1, 5, 6, 11, 12}

D = {all integers < 100}

$A \cap B$ = {4, 6, 12}

$A \cap C$ = {6, 12}

$B \cap C$ = {6, 12}

$A = \{4, 6, 12, 48\}$

$B = \{2, 4, 6, 8, 10, \ldots 50\}$

$C = \{-3, -1, 5, 11, 12\}$

$D = \{\text{all integers} < 100\}$

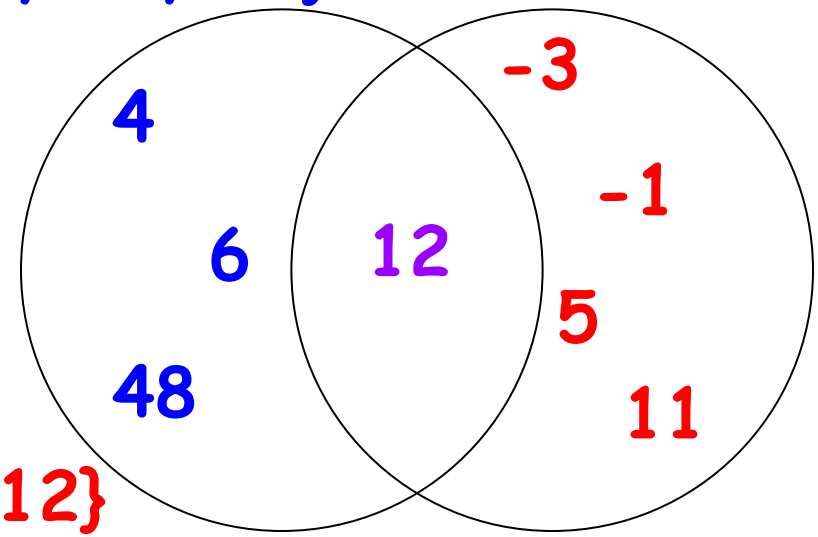
union $\cup$

$A \cup B = \{2, 4, 6, 8, 10, \ldots 50\}$

$A \cup C = \{-3, -1, 4, 5, 6, 11, 12, 48\}$

Venn diagram

$A = \{4, 6, 12, 48\}$

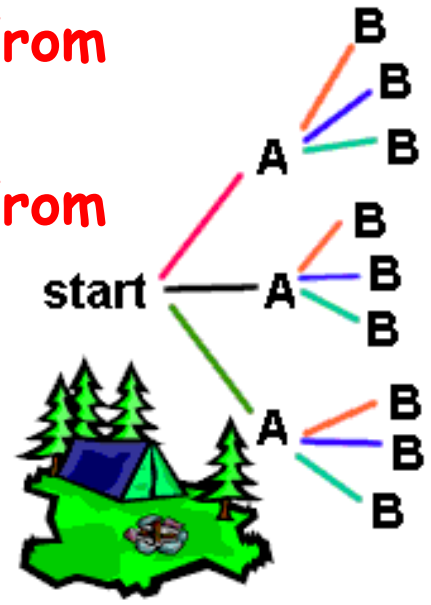


$C = \{-3, -1, 5, 11, 12\}$

tree diagram

There are 3 trails from start to Camp A.
There are 3 trails from Camp A to Camp B.

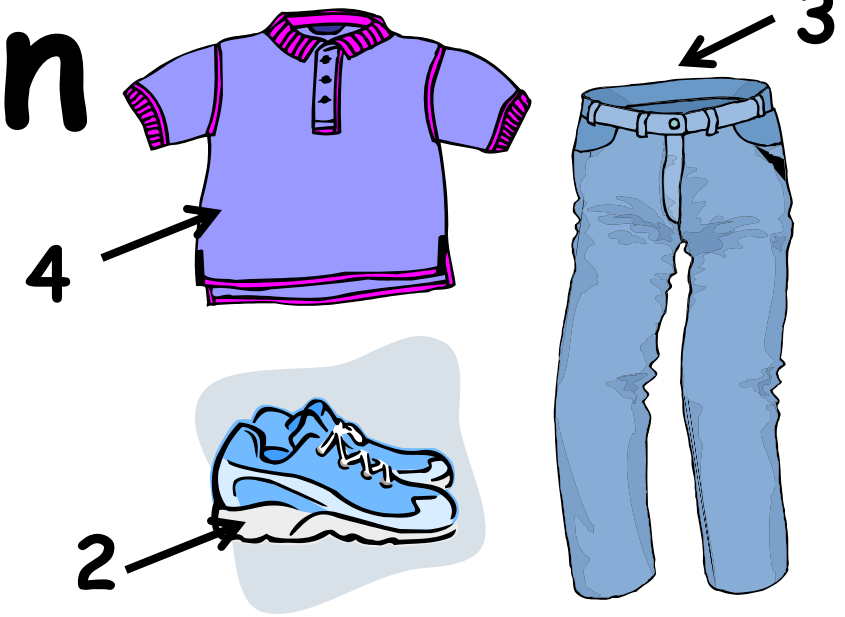
How many routes?



multiplication principle

How many outfits?

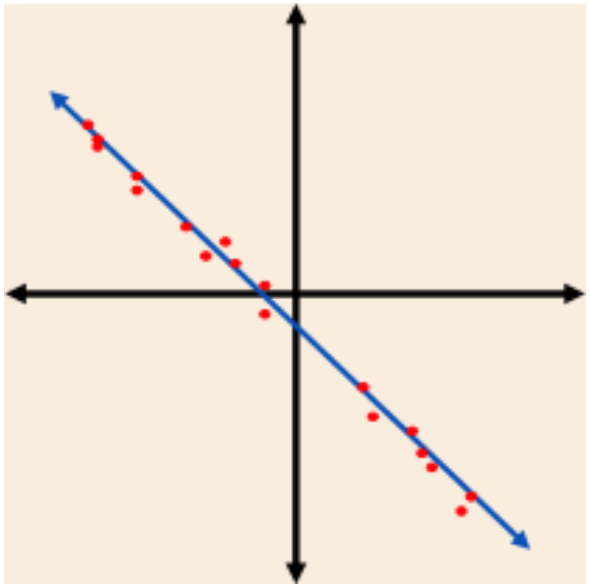
$4 \times 3 \times 2 = 24$



addition principle

P(even or 3) = P(2) + P(3)

$$= \frac{1}{2} + \frac{1}{6} = \frac{3}{6} + \frac{1}{6} = \frac{4}{6} = \frac{2}{3}$$



line of best fit