Numbers

Real

Rational Integers Whole Natural Irrational

Symmetry/Rotations/Dot Diagrams/SA/V

Horizontal Line Symmetry Vertical Flip Vertical Line Symmetry Horizontal flip Oblique-Oblique

Exponents

Laws

If you don't see an exponent, give it 1!

Add

Subtract Multiply **Negatives** Coefficients (Brackets) Fractions/Roots

$$(2^{2})^{3} = 2^{2 \times 3}$$

 $2^{-3} = \frac{1}{2^{3}} \quad 2^{3} = \frac{1}{2^{-3}}$

 $2^3 \times 2^2 = 2^{3+2}$

 $\frac{x^m}{x^n} = x^{m-n}$ $(x^m)^n = x^{m \times n}$ Change of Base

$$2^{3} \times 2^{2} = 2^{3+2}$$

$$\frac{3^{5}}{3^{2}} = 3^{5-2}$$

$$(2^{2})^{3} = 2^{2\times 3}$$

$$2^{-3} = \frac{1}{2^{3}} \quad 2^{3} = \frac{1}{2^{-3}}$$

$$-2^{2} = -4$$

$$(-2)^{2} = +4 \quad (-2)^{3} = -8$$

$$5^{\frac{3}{2}} = \sqrt[2]{5^{3}}$$

$$8 = 2^{3}$$

$$\left(\frac{-2}{2} \right)^{even} = +ve \quad (-4)^{odd} = -ve$$

Fractional Exponents Change of Base

$$5^{\frac{3}{2}} = \sqrt[2]{5^3}$$
$$8 = 2^3$$

$$x^{\frac{m}{n}} = \sqrt[n]{x^m}$$

$$x^a = y^b$$

Polynomials: Whole Number Exponents! (Mono, Bi, Tri, Quad/Tetra, ...)

Combine Like Terms: (Adding and Subtracting) Add/Subtract Coefficients

$$5a - 2a = 3a$$
$$1x^2 + 1x^2 = 2x^2$$

Like Term: Same Letter(s) Same Exponent(s)

(Highest) Coefficient \longleftarrow Degree* \longleftarrow Leading Term

SIGNS NUMBERS LETTERS

1 Pen + 1 Pen = 2 Pens!

Multiply/Divide: Multiply coefficients, add exponents.

$$a1 \times a1 = a2$$
$$2a \times 3a = 6a2$$
$$3x2 \times 5x3 = 15x5$$

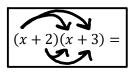
Constant $5 = 5x^0$

Divide coefficients, subtract exponents.

$$20x^{3} \div 5x^{2} = 4x$$
$$30a^{4} \div 6a^{2} = 5a^{2}$$

Distribution/FOIL

Tiles



Not Polynomial: $\sqrt{x}, \frac{1}{x}, x^{-2}, 2^x$

M8 Methods

%/Fractions/Decimals Pythag/Geometry Bedmas/# Forms Substitution, let m = # Equations/Word Problems Algebra/Fractions/LCD TOV/Graphing Distribution/FOIL Probability

Inequalities

Signs Laws **Negatives Number Line** Equations

Parallel Lines: Angles

 \angle 's On Line = 180°

Opposite $\angle's = [X]$

Alt-Int $\angle 's = [Z]$ $Corr \angle 's = [C]$

Co-Int \angle 's sum = 180°

Rotate the page

Extend the lines

Circle Rules:

Shade the Cord/Arc

Use Hands

Draw a radius

Inscribed/Central $C \angle' s = 2I \angle' s$

Opp $\angle's$ Cyclic Quads = 180^o

Semi-Circles

Tick Equal Sides/Angles / Perpendicular Bisector Arrow Parallel Lines — Tangents/Ext Points

Polygons Int/Ext $\angle's$ (Triangle Method)

Similar triangles

AAA

Congruent (Equal) Triangles: SSS, SAS, ASA, AAS, HL