Name:

Fractions

+

use common denominators

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

$= 2\frac{6}{12} + 3\frac{4}{12} + 4\frac{3}{12}$ LCM of 3,4,2 = 12

$= 9\frac{13}{12}$ make into proper

$10\frac{1}{12}$ $\frac{13}{12} = 1\frac{1}{12}$

* mixed to improper $3\frac{2}{4} = 3\times4+2 = \frac{14}{4}$

* improper to mixed $14/4$ Divide $14 \div 4 = 3$ r 2; so $3\frac{2}{4} = 3\frac{1}{2}$

−

use common denominators

$6\frac{3}{4} - 3\frac{1}{2}$

$= 6\frac{3}{4} - 3\frac{2}{4}$ LCM of 2+4 = 4

$= 3\frac{1}{4}$

* to reduce divide num+ den. by the same #

$\frac{18 \div 2}{4 \div 2} = \frac{9}{2} = 4\frac{1}{2}$

×

multiply numerator × numerator / denominator × denominator

$\frac{2}{4} \times \frac{3}{6}$

$= \frac{6 \div 6}{24 \div 6} = \frac{1}{4}$ reduce

$2\frac{1}{2} \times 3\frac{1}{3}$

$= \frac{5}{2} \times \frac{10}{3}$

$= \frac{50}{6}$

$= 8\frac{2}{6} = 8\frac{1}{3}$

÷

KCF (keep, change, flip) multiply by reciprocal

$\frac{2}{4} \div \frac{3}{6}$

$= \frac{3}{4} \times \frac{6}{3}$

$= \frac{12}{12}$

$= 1$

$2 \div \frac{1}{3}$

$= 2 \times \frac{3}{1}$

$= \frac{6}{1}$

$= 6$

$4 \div 3$

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

$= \frac{4}{3}$

$= 1\frac{1}{3}$

Decimals

+

Line up decimals & add

$12.6 + 11.32$

$\begin{array}{r} 12.6 \\ +\ 11.32 \\ \hline 23.92 \end{array}$

−

Line up the decimals + subtract

$90.62 - 42.3$

$\begin{array}{r} {}^{8}\not{9}0.62 \\ -\ 42.3 \\ \hline 48.32 \end{array}$

×

multiply as usual (add total number of decimals to answer)

$4.2 \times 1.6 =$

$\begin{array}{r} 4.2 \text{ (1 decimal)} \\ \times\ 1.6 \text{ (1 decimal)} \\ \hline 252 \\ 420 \\ \hline 6.72 \text{ (2 decimal places)} \end{array}$

÷

multiply by multiple of ten to get rid of decimal in divisor. $3.6 \overline{)72.0}$

$\begin{array}{r} 20.0 \\ 36\overline{)7200} \\ 72\downarrow \\ \hline 00 \\ 0\downarrow \\ \hline 08 \\ 0 \\ \hline \end{array}$

Integers

+

Absolute value → take sign of largest and find the difference (or tug of war)

$(+9) + (-2)$

$= +7$

$(-12) + (+3)$

$= -9$

−

KCF (Keep, change, Flip)

$(+5) - (-4+3)$

$+5 + (+4 -3)$

$+5 + 4 - 3$

$+9 - 3$

$+6$

×

multiply as usual and follow these sign rules.

$(+)(+) = +$

$(-)(-) = +$

$(-)(+) = -$

$(+)(-) = -$

÷

Divide as usual and follow these sign rules

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

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

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

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

Fraction of a Number

$\frac{1}{3}$ of 120

$= \frac{1}{3} \times \frac{120}{1}$

$= \frac{120}{3}$ ← Divide

$= 40$

Percent of a Number

50% of 120

0.50×120 (Percent to decimal)

$= 60$

$\begin{array}{r} 120 \\ \times\ .5 \\ \hline 60. \end{array}$

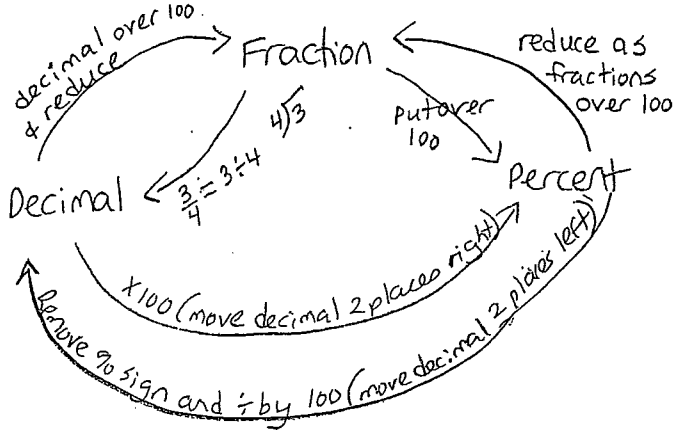
Tax

1. Find % of a number.
2. add tax to original cost.

Discount

1. Find % of a number
2. subtract discount from original cost.

Circle of Math



Making a Circle Graph (a circle has 360°)

1. make each number a fraction of the total number. i.e $\frac{6}{24} = \frac{1}{4}$
2. Put into a %. $\frac{1}{4} = 4\overline{)1.00} = 25\%$

$\begin{array}{r} .25 \\ 4\overline{)1.00} \\ 8\downarrow \\ \hline 20 \\ 20 \\ \hline 0 \end{array}$

3. Find % of 360

$= 25\%$ of 360

$= .25 \times 360$

$= 90°$

4. Draw sectors with correct number of degrees.
5. Label sectors with name & percent. (Gold 25%)

Remember for all Graphs

- Be neat
- Put a title
- label both axes
- use constant scale

Perimeter $P = \Sigma s$ (add all sides) Be sure to convert all to the same units. Use for trim, fence, etc. Answer in units i.e. m

Area (in units^2) use for paint, flooring, space occupied by a garden, etc

Different formulas for different shapes

Shape	Formula + Example
rectangles, squares, parallelogram	$A = bh$ $= 8 \times 4$ $= 32 cm^2$
triangle	$A = \frac{bh}{2}$ $= \frac{5 \times 3}{2} = \frac{15}{2} = 7.5 cm^2$
trapezoid	$A = \frac{h(b_1 + b_2)}{2} = \frac{2(8+10)}{2} = \frac{2(18)}{2} = \frac{36}{2} = 18 cm^2$

* if changing m^2 to cm^2 then double the number of steps in m to cm = 2 steps so m^2 to cm^2 = 4 steps $1 m^2 = 10000 cm^2$

$\times 10$ or move decimal 1 time right per step

base meter, gram, litre

km, hm, dam, g, m, l, dm, cm, mm

$\div 10$ or move decimal 1 time left per step

Shapes	# of sides	Sum of Angles
Triangles		
Equilateral (3 sides + 3 angles =)	3	180°
Isosceles (2 sides + 2 angles =)	3	180°
Scalene (no sides =)	3	180°
Right	3	180°
Quadrilaterals	4	360°
Pentagon	5	540°
Hexagon	6	720°
Septagon / Heptagon	7	900°
Octagon	8	1080°
Nonagon	9	1260°
Decagon	10	1440°
Hendecagon	11	1620°
Dodecagon	12	1800°

Angles

Supplementary = 180°

Complementary = 90°

acute angle = less than 90°

right angle = 90°

obtuse angle = between 90° & 180°

Reflex = between 180° and 360°

Naming Angles: $m\angle x = \angle BCA$

Types

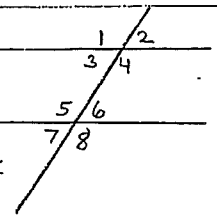
Alternate Interior = (4,5), (3,6)

Alternate Exterior = (1,8), (2,7)

Corresponding = (1,5), (2,6), (3,7), (4,8)

Vertical (vertically opposite) = (2,3), (1,4), etc

cointerior angles = (3,5), (4,6)



Factor (remove prime numbers (factors of 1 and itself)

2 | 28

2 | 14

7 | 7

1

$28 = 2 \cdot 2 \cdot 7$

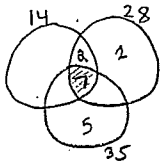
GCF: Greatest Common Factor

1. Factor #s (as in Factor notes)
2. create venn diagram
3. Calculate GCF

14: 2 · 7

28: 2 · 2 · 7

35: 5 · 7



* common in all three was 7 so the GCF = 7.

LCM: Lowest Common Multiple

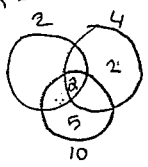
Lowest multiple they all fit into

1. Factor
2. create venn diagram
3. calculate LCM — multiple all from Diagram

2: 2, 4, 6, 8, 10

4: 4, 8

10: 10



LCM = 2 · 2 · 5 = 20

Sum of Interior Angles of a polygon

$(n-2) \times 180°$ n = # of sides

Rounding

if less than 5 → round down

if 5 or more → round up

Place Value

763423 4.579

ones, tens, hundreds, thousands, ten thousands, hundred thousands, millions

tenths, hundredths, thousandths

Exponents

3^2 ← exponent

3 = base

power

$3^2 = 3 \cdot 3 = 9$

i.e. $(-2)^2 = (-2) \cdot (-2) = +4$

* if a negative base in brackets has an even # exponent the answer is positive

$-2^2 = -4$

exponent 2 = squared

exponent 3 = cubed

Any # with an exponent of 0 = 1 i.e $4^0 = 1$, $-4^0 = 1$

Any # with an exponent of 1 is = to itself i.e $4^1 = 4$, $-4^1 = -4$

BEDMAS

B = Brackets

E = exponents

D/M > Division / multiplication (in the order they appear)

A/S > addition / subtraction (in the order they appear)

$9^1 + (6 + 3^3 \div 3) \times 2°$

B: $9^1 + (6 + 27 \div 3) \times 2°$

B: $9^1 + (6 + 9) \times 2°$

B: $9^1 + 15 \times 2°$

E: $9 + 15 \times 1$

M: $9 + 15$

A: 24

Finding average (mean): Add up all the scores and divide by the number of scores i.e.

$mean = \frac{10 + 12 + 14 + 18}{4}$

$= \frac{54}{4}$

$= 13.5$