

Order of Operations: Review

What is an operation?

"Operation" means things like

But, when you see ... $7 + (6 \times 5^2 + 3)$... which part should you calculate first?

What is the Order of Operations?

Evaluate:

1) $3 \times 2 - 5(4 - 3 \times 2)^3 + 1$

2) $2 - 2(-4 - 3 \times 2)^2(2)$

3) $8 \div (2 - 4)(9 - 5 \times 2)^3 + 1$

47

-398

5

4) $-5 \times 2 - 4(2 - 3 \times 2)^2 - 4$

5) $5 - 2(-(-4 + 3) \times 2)^2 \times 10$

6) $12 \div (6 - 4)(-9 + 5 \times 2)^3 - 100$

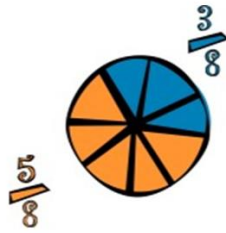
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Fractions: Review

What is a fraction?



Parts of a fraction:

What are the types of fractions?

How do you add /subtract fractions?

In order to add or subtract fractions, you must have a

Step 1:	Look to see if you can reduce any fractions and/or make switch mixed fractions into improper fractions
Step 2:	Identify the lowest common denominator (LCD) to make the bottoms the same
Step 3:	Add/Subtract the numerator together, keeping the denominator the SAME.
Step 4:	Simplify the Fraction by reducing if possible.

Evaluate:

$$\frac{5}{6} + \frac{2}{4}$$

$$2\frac{1}{3} - 4\frac{2}{5}$$

Evaluate

7) $1\frac{2}{3} + \frac{4}{5}$

8) $-\frac{2}{3} - \frac{4}{5}$

9) $-2\frac{2}{3} + \frac{4}{5}$

$\frac{37}{15}$

$-\frac{22}{15}$

$-\frac{28}{15}$

10) $3\frac{1}{7} - \frac{4}{3}$

11) $\frac{3}{8} - \frac{2}{9}$

12) $-3\frac{1}{6} - \frac{4}{9}$

$\frac{38}{21}$

$\frac{11}{72}$

$-\frac{65}{18}$

How do you
Multiply
fractions?

Evaluate:

$\frac{5}{6} \times \frac{2}{3}$

How do you
Divide
fractions?

Step 1:	Take the reciprocal of the second fraction. (Flip the fraction <u>after</u> the division sign)
Step 2:	Change the sign to multiply, and multiply. Don't forget to reduce!

Evaluate:

$\frac{-2}{3} \div \frac{2}{5}$

How do you
simplify a
fraction first?

$$\frac{-12}{30} \div \frac{24}{50}$$

$$-2\frac{1}{5} \div 1\frac{3}{4}$$

$$13) \frac{5}{4} \times \frac{3}{2}$$

$$\frac{15}{8}$$

$$14) -\frac{15}{10} \times \frac{-25}{-20}$$

$$-\frac{15}{8}$$

$$15) -\frac{2}{3} \div \frac{36}{30}$$

$$-\frac{5}{9}$$

$$16) -\frac{25}{24} \times \frac{36}{30}$$

$$-\frac{5}{4}$$

$$17) -\frac{9}{4} \div 1\frac{1}{2}$$

$$-\frac{3}{2}$$

$$18) \left(\frac{5}{4}\right)^2 \div \frac{5}{8}$$

$$\frac{5}{2}$$

$$19) \left(\frac{9}{2}\right)^2 \div 3\frac{3}{2}$$

$$\frac{9}{2}$$

$$20) -\frac{3}{14} \left(\frac{1}{6} - \frac{2}{9}\right)$$

$$\frac{1}{84}$$

$$21) \frac{-2}{5} \left(\frac{7}{2} - \frac{6}{4}\right)$$

$$-\frac{4}{5}$$

$$22) -3 + \frac{10}{6} \times \frac{8}{12}$$

$$-\frac{17}{9}$$

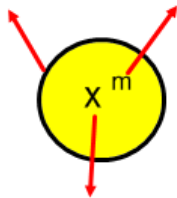
$$23) \left(\frac{5}{3}\right)^2 - \frac{12}{20}$$

$$\frac{98}{45}$$

$$24) 2\frac{2}{5} - \left(\frac{7}{6} \div \frac{21}{12}\right)^2$$

$$\frac{88}{45}$$

What is an Exponent?



What are the operation rules for exponents?

The Exponent Laws:

Product Law

$$(x^m)(x^n) =$$

Power of a Power Law

$$(x^m)^n =$$

Quotient Law

$$(x^m)/(x^n) =$$

Zero Exponent Law

$$x^0 =$$

Power of a Product Law

$$(xy)^n =$$

Negative Exponent Law

Power of a Quotient Law

$$(x/y)^n =$$

$$x^{-1} =$$

Evaluate:

a) $3^3 \cdot 3^4$

b) $\frac{4^3}{4^2}$

c) $(2^4)^3$

d) $(x^3)(x^4)$

e) $\frac{b^3}{b^2}$

f) $(r^5)^3$

g) $(x^0)(3^0)$

h) r^{-5}

i) $\frac{b^2}{b^4}$

Evaluate:

25) $(3m^5)(4m^6)$

26) $(-3m^2)(-m^2)$

27) $\frac{m^5 m^3}{m^4}$

28) $\frac{m^{50} m^3}{m^{40}}$

$12m^{11}$

$3m^4$

m^4

m^{13}

29) $\frac{m^2 m^7}{m^5}$

30) $\frac{m^5 m^3}{m^4} \times \frac{m^2 m^4}{m^3}$

31) $\frac{m^5 (m^8)^2 (m^5)^2}{m^3}$

32) $\frac{4m^5 m^3 (m^3)^2}{6m^3 (m^2)^2}$

m^4

m^7

m^{28}

$\frac{2m^7}{3}$

What is a Polynomial?

A monomial is a number, a variable or a combination of these together that form a single term.



A polynomial is an expression formed by adding or subtracting monomials together.

What is a Like Term?

$$3x + 5x =$$

$$-2x + 4y - 3x + 7y =$$

$$5a^2 - 6a - 2a^2 + 10a =$$

How do we add/subtract polynomials?

$$(x^2 - 4x + 7) + (3x^2 - 5x - 10)$$

$$(5x^2 - 2x + 13) - (3x^2 - 9x + 8)$$

How do we multiply polynomials?

$$(a + 4)(a - 1) =$$

$$(3x + 2y)(5x - 8y) =$$

Evaluate:

33) $(a + 1)(a - 2)$

34) $(b + 4)(b + 5)$

35) $(c - 11)(c - 3)$

36) $(d + 10)(d + 5)$

$a^2 - a - 2$

$b^2 + 9b + 20$

$c^2 - 14c + 33$

$d^2 + 15d + 50$

37) $(x - 5)^2$

38) $(x + 1)^2$

39) $(x - 5y)(x + 5y)$

40) $(3x + 10y)(3x - 10y)$

$x^2 - 10x + 25$

$x^2 + 2x + 1$

$x^2 - 25y^2$

$9x^2 - 100y^2$

What is a common factor?

A common factor is either a number or variable that is common in a polynomial.

$2a + 10$

$3x^2 + 5x$

How do you factor a Trinomial?

$x^2 + 10x + 16 =$

$x^2 - 46x + 45 =$

Factor:

41) $x^2 - 46x + 45$

$(x - 45)(x - 1)$

42) $x^2 - 9x - 36$

$(x - 12)(x + 3)$

43) $x^2 + 6x - 16$

$(x + 8)(x - 2)$

44) $b^2 - 5ab - 24a^2$

$(b - 8a)(b + 3a)$

45) $w^2 - 7wx - 44x^2$

$(w - 11x)(w + 4x)$

46) $g^2 + 11gh - 12h^2$

$(g + 12h)(g - h)$

How do you
factor a
Trinomial?

$2x^2 + 3x + 1 =$

$3x^2 + 4x - 4 =$

47) $2x^2 + 12x + 10$

$2(x + 5)(x + 1)$

48) $5x^2 + 13x + 6$

$(5x + 3)(x + 2)$

49) $-10x^2 + 20x + 150$

$-10(x - 5)(x + 3)$

50) $2x^2 + 3x + 1$

$(2x + 1)(x + 1)$

51) $2x^2 + 11x + 5$

$(2x + 1)(x + 5)$

52) $3x^2 + 16x + 5$

$(3x + 1)(x + 5)$

How do you
factor a
Difference of
Squares?

$x^2 - 4 =$

$4x^2 - 25 =$

53) $4x^2 - y^2$

$(2x - y)(2x + y)$

54) $9x^2 - 16y^2$

$(3x - 4y)(3x + 4y)$

55) $81x^2 - 144y^2$

$(9x - 12y)(9x + 12y)$

56) $x^4 - 16$

$(x - 2)(x + 2)(x^2 + 4)$

57) $x^4 - y^4$

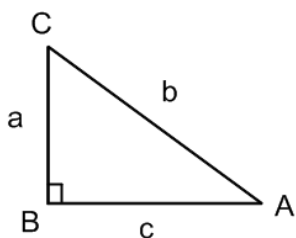
$(x - y)(x + y)(x^2 + y^2)$

58) $81 - y^4$

$(3 - y)(3 + y)(9 + y^2)$

Right Angled Trigonometry

What are the three primary trigonometric ratios?

**Example 1**

Determine the value of x to the nearest tenth.

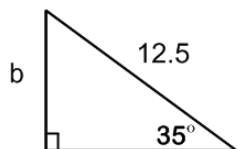
a) $\sin x = \frac{2}{3}$

b) $\cos 32^\circ = \frac{x}{13}$

c) $\tan 15^\circ = \frac{6}{x}$

Example 2

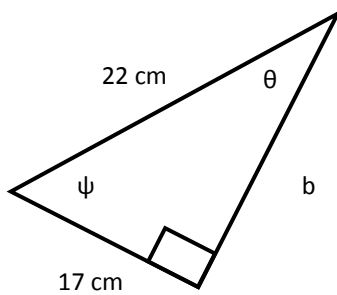
Find the length of the indicated side, to the nearest tenth



Example 3

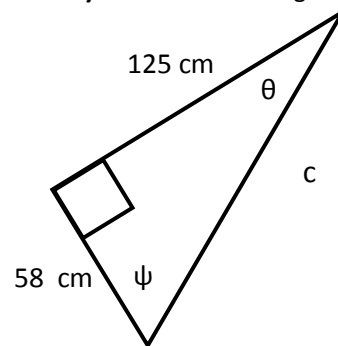
In $\triangle ABC$, $\angle B = 90^\circ$, $\angle C = 42^\circ$, and $c = 8.4$ cm. Solve the triangle, rounding side lengths to the nearest tenth of a centimetre.

59) Solve the following triangle. Show all your work.



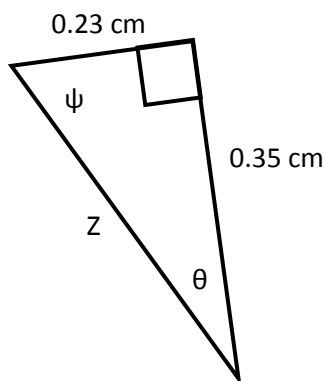
$$\theta = 50.6^\circ \quad \psi = 39.4^\circ \quad b = 14 \text{ cm}$$

60) Solve the following triangle. Show all your work.



$$\theta = 24.9^\circ \quad \psi = 65.1^\circ \quad c = 137.8 \text{ cm}$$

61) Solve the following triangle.

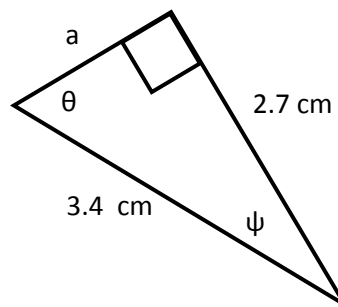


$$\theta = 33.3^\circ \quad \psi = 56.7^\circ \quad c = 0.42 \text{ cm}$$

63) In $\triangle ABC$, $\angle A = 90^\circ$, $\angle C = 38^\circ$ and $c = 16.7$ cm. Solve the triangle.

$$a = 27.1 \text{ cm}, b = 21.4 \text{ cm}, \angle B = 52^\circ$$

62) Solve the following triangle.



$$\theta = 52.6^\circ \quad \psi = 37.4^\circ \quad c = 2.1 \text{ cm}$$

64) In $\triangle ABC$, $\angle A = 90^\circ$, $\angle B = 27^\circ$ and $c = 28.7$ cm. Solve the triangle.

$$a = 32.2 \text{ cm}, b = 14.6 \text{ cm}, \angle C = 63^\circ$$