

Review topics by number

1 – 3 Regular equations

4 – 5 Absolute value

6 – 9 Inequalities

10 – 13 Clearing the fraction

14 – 17 Clearing the decimal

18 – 19 Solving Quadratics by factoring

20 – 24 Solving for variables in formulas

25 – 30 Rational equations

31 Work problem

32 – 33 Quadratic Formula

34 – 37 Solving trinomial quadratics factoring

38 – 40 Solving quadratics by completing the square

1.

Solve for r

$$4(r - 2) = 2(r + 8)$$

$$4r - 8 = 2r + 16$$

$$\begin{array}{r} -2r \quad -2r \\ \hline \end{array}$$

$$2r - 8 = 16$$

$$\begin{array}{r} +8 \quad +8 \\ \hline \end{array}$$

$$2r = 24$$

$$\boxed{r = 12}$$

2.

Solve for x

$$7(2x - 3) - 4(x + 5) = 8(x - 1) + 3$$

$$14x - 21 - 4x - 20 = 8x - 8 + 3$$

$$\begin{array}{r} 10x - 41 = 8x - 5 \\ - 8x \qquad - 8x \end{array}$$

$$\begin{array}{r} 2x - 41 = -5 \\ + 41 \qquad + 41 \end{array}$$

$$2x = 36$$

$$\boxed{x = 18}$$

3.

Solve for x

$$-6(8 - 2x) + 25 = -5(2 - 3x)$$

$$-48 + 12x + 25 = -10 + 15x$$

$$-23 + 12x = -10 + 15x$$

$$\begin{array}{r} -12x \qquad \qquad \qquad -12x \\ \hline \end{array}$$

$$-23 = -10 + 3x$$

$$\begin{array}{r} +10 \qquad +10 \\ \hline \end{array}$$

$$-13 = 3x$$

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

4.

Solve for x

$$-4(8 - 3|x|) = 2|x| + 8$$

$$\begin{array}{r} -32 + 12|x| = 2|x| + 8 \\ - 2|x| \quad - 2|x| \\ \hline \end{array}$$

$$\begin{array}{r} -32 + 10|x| = 8 \\ + 32 \quad + 32 \\ \hline \end{array}$$

$$10|x| = 40$$

$$|x| = 4$$

$$x = \pm 4$$

5.

Solve for x

$$-4 + |x| - \frac{3}{4}|x| = .45 + \frac{7}{8}|x|$$

$$-4 + \frac{1}{4}|x| = .45 + \frac{7}{8}|x|$$

$$-\frac{1}{4}|x| \qquad -\frac{1}{4}|x|$$

$$-4 = .45 + \frac{5}{8}|x|$$

$$-.45 - .45$$

$$\frac{8}{5} \cdot -4.45 = \frac{5}{8}|x| \cdot \frac{8}{5}$$

$$-7.12 = |x|$$

Absolute Value cannot
be a negative #!

No solution

6.

Solve for t and graph

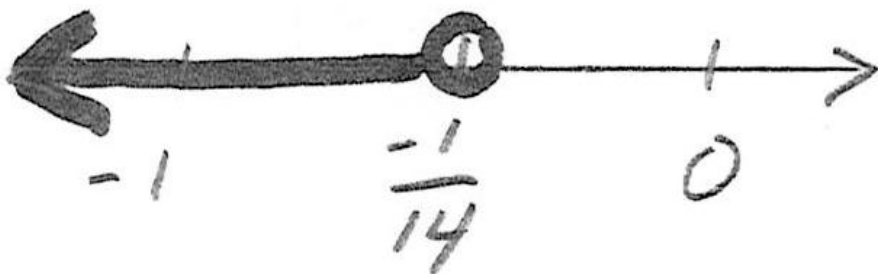
$$-\frac{7}{8} > -\frac{5}{6} + \frac{7}{12}t$$

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

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

$$\frac{12}{7} \cdot \frac{-1}{24} > \frac{7}{12} t \cdot \frac{12}{7}$$

$$\frac{-1}{14} > t$$



7.

Solve for x and graph

$$\frac{2}{5} \left(\frac{8}{15}x - 4 \right) \geq \frac{2}{3}x + \frac{3}{5}$$

Multiply by 15

$$6\left(\frac{8}{15}x - 4\right) \geq 10x + 9$$

$$\frac{16}{5}x - 24 \geq 10x + 9$$

$$-\frac{16}{5}x$$

$$-\frac{16}{5}x$$

$$-24 \geq 6\frac{4}{5}x + 9$$

$$-9$$

$$-9$$

$$-33 \geq 6\frac{4}{5}x$$

$$-4\frac{29}{34} \geq x$$



8.

Solve for x and graph

$$\frac{5}{8} - \frac{1}{5}x \leq \frac{2}{5} - \frac{7}{10}x$$

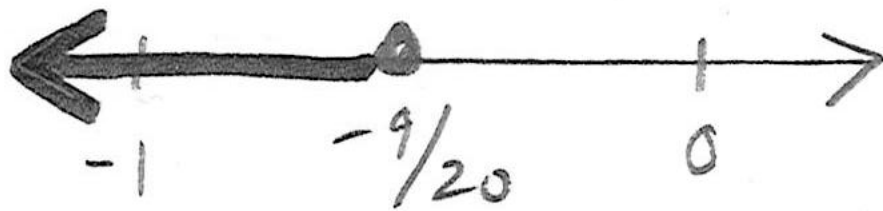
MULTIPLY BY 40

$$\begin{array}{r} 25 - 8x \leq 16 - 28x \\ + 28x \qquad + 28x \end{array}$$

$$\begin{array}{r} 25 + 20x \leq 16 \\ - 25 \qquad - 25 \end{array}$$

$$20x \leq -9$$

$$x \leq -\frac{9}{20}$$



9.

Solve for x and graph

$$\frac{9}{10} \div \frac{8}{25} + \frac{3}{2}x < \frac{4}{9} - \frac{2}{3}x$$

$$2 \frac{9}{10} \cdot \frac{25^5}{8} + \frac{3}{2}x < \frac{4}{9} - \frac{2}{3}x$$

$$\frac{45}{16} + \frac{3}{2}x < \frac{4}{9} - \frac{2}{3}x$$
$$+ \frac{2}{3}x \qquad \qquad \qquad + \frac{2}{3}x$$

$$\frac{45}{16} + 2\frac{1}{6}x < \frac{4}{9}$$
$$- \frac{45}{16} \qquad \qquad \qquad - \frac{45}{16}$$

$$2\frac{1}{6}x < -2\frac{53}{144}$$

$$x < -1\frac{29}{312}$$



10.

Solve for w by clearing the fraction

$$\frac{5}{9}w + 1\frac{2}{7} = 3w$$

multiply by 63

$$\begin{array}{r} 35w + 81 = 189w \\ - 35w \qquad \qquad - 35w \end{array}$$

$$81 = 154w$$

$$w = \frac{81}{154}$$

11.

Solve for x by clearing the fraction

$$\frac{2}{3}x - 1 = \frac{5}{6}x + \frac{3}{2}$$

MULTIPLY by 6

$$4x - 6 = 5x + 9$$

$$-4x \quad -4x$$

$$-6 = x + 9$$

$$-9 \quad -9$$

$$-15 = x$$

12.

Solve for x by clearing the fraction

$$\frac{5}{9} + \frac{5}{12}x = \frac{11}{12} + \frac{7}{9}x$$

multiply by 36

$$\begin{array}{r} 20 + 15x = 33 + 28x \\ -15x \qquad \qquad -15x \\ \hline \end{array}$$

$$\begin{array}{r} 20 = 33 + 13x \\ -33 \quad -33 \\ \hline \end{array}$$

$$-13 = 13x$$

$$\boxed{x = -1}$$

13.

Solve for x by clearing the fraction

$$-\frac{12}{19} + \frac{3}{8}x = -\frac{17}{57}$$

multiply by 456

$$\begin{array}{r} -288 + 171x = -136 \\ + 288 \qquad \qquad \qquad + 288 \\ \hline \end{array}$$

$$171x = 152$$

$$x = \frac{152}{171} = \frac{8}{9}$$

14.

Solve for x by clearing the decimal

$$-5.2(x - 3.4) = .45$$

multiply by 100

$$-520(x - 3.4) = 45$$

$$-520x + 1768 = 45$$

$$\begin{array}{r} -1768 \quad -1768 \\ \hline \end{array}$$

$$-520x = -1723$$

$$x \approx 3.313$$

15.

Solve for x by clearing the decimal

$$-2.3x - 1.276 = 6.728 + .55x$$

multiply by 1000

$$\begin{array}{r} -2300x - 1276 = 6728 + 550x \\ + 2300x \qquad \qquad \qquad + 2300x \\ \hline \end{array}$$

$$-1276 = 6728 + 2850x$$

$$\begin{array}{r} -6728 \quad -6728 \\ \hline \end{array}$$

$$-8004 = 2850x$$

$$x \approx -2.808$$

16.

Solve for x by clearing the decimal, round to ten millionths.

$$.0045n + .002 = -.000646 - 20n$$

Multiply by 1,000,000

$$\begin{array}{r} 4500n + 2,000 = -646 - 20,000,000n \\ + 20,000,000 \qquad \qquad \qquad + 20,000,000n \end{array}$$

$$\begin{array}{r} 20,004,500n + 2000 = -646 \\ - 2000 \qquad \qquad \qquad - 2000 \end{array}$$

$$20,004,500n = -2646$$

$$n \approx -0.0001323$$

17.

Solve for x by clearing the decimal, round to thousandths.

$$6.98x + 13.88 + 17.354 = -4.02x + 70.234$$

Multiply by 1000

$$6980x + 13880 + 17,354 = -4020x + 70234$$

$$\begin{array}{r} 6980x + 31,234 = -4020x + 70234 \\ +4020x \qquad \qquad \qquad +4020x \end{array}$$

$$\begin{array}{r} 11,000x + 31,234 = 70,234 \\ -31,234 \qquad -31,234 \end{array}$$

$$11,000x = 39,000$$

$$\boxed{x \approx 3.545}$$

18.

**Solve the quadratic equation by
factoring**

$$4c^2 - 2c = 0$$

factor $2c$

$$2c(2c-1) = 0$$

$$2c = 0$$

$$c = 0$$

$$2c - 1 = 0$$

$$+1 \quad +1$$

$$2c = 1$$

$$c = \frac{1}{2}$$

$$\boxed{0 \neq \frac{1}{2}}$$

19.

Solve the quadratic equation by factoring

$$24a^2 = 8a$$

$$24a^2 = 8a$$

$$-8a \quad -8a$$

$$24a^2 - 8a = 0$$

factor $8a$

$$8a(3a - 1) = 0$$

$$8a = 0 \quad 3a - 1 = 0$$

$$a = 0 \quad a = \frac{1}{3}$$

$$\boxed{0, \frac{1}{3}}$$

20.

Solve for h

$$S = 2(wh + lw + hl)$$

$$S = 2(wh + lw + hl)$$

$$S = 2wh + 2lw + 2hl$$

$$- 2lw$$

$$- 2lw$$

$$S - 2lw = 2wh + 2hl$$

$$S - 2lw = \frac{h(2w + 2l)}{2w + 2l}$$

$$2w + 2l$$

$$2w + 2l$$

$$h = \frac{S - 2lw}{2w + 2l}$$