

Simplify Expressions & Solve Equations (7 questions on STAAR)

Solve Linear Equations (A5A)

Solve linear equations in one variable, including those for which the application of the **distributive property** is necessary and for which **variables are included on both sides**

I can...

- Distribute and combine like terms to simplify equations
- Get variables on one side of equal sign

Notes:

- One solution, no solution, infinitely many solutions
- x = #* *x's disappear, #s are different* *x's disappear, #s are same*

- Steps:**
- ① Get rid of (). Multiplying
 - ② Move x's to one side and #s to other side.
 - ③ Divide.

Sample Questions

Solve the following equations

Example: $8x - 39 = 3(1 + 5x)$

$$\begin{array}{r|l} 8x - 39 & 3 + 15x \\ -15x & -15x \\ \hline -7x - 39 & 3 \\ +39 & +39 \\ \hline -7x & 42 \\ -7 & -7 \\ \hline & 35 \end{array}$$

$x = -6$

Example: $-4\left(\frac{5}{2}x - \frac{7}{5}\right) = \frac{278}{5}$

$$\begin{array}{r|l} -10x + \frac{28}{5} & \frac{278}{5} \\ -\frac{28}{5} & -\frac{28}{5} \\ \hline -10x & \frac{50}{5} \\ -10 & -10 \\ \hline & 40 \end{array}$$

$x = -5$

Example: $-(6x + 7) = -7 - 6x$

$$\begin{array}{r|l} -6x - 7 & -7 - 6x \\ +6x & +6x \\ \hline -7 & -7 \\ -7 & +7 \\ \hline & 0 \end{array}$$

(R) all real #s
infinitely many solutions

Example: $35 - 3x = 5(8x + 7) - 7x$

$$\begin{array}{r|l} 35 - 3x & 40x + 35 - 7x \\ 35 - 3x & 33x + 35 \\ -33x & 33x \\ \hline 35 - 36x & 35 \\ -35 & -35 \\ \hline & 0 \end{array}$$

$-36x = 0$
 $x = 0$

(53%)

34 What is the solution to $34x + 95 = 3(14x + 9)$?

Record your answer and fill in the bubbles on your answer document.

$$\begin{array}{r|l} 34x + 95 & 42x + 27 \\ -42x & -42x \\ \hline -8x + 95 & 27 \\ -95 & -95 \\ \hline -8x & -68 \end{array}$$

$x = 17/2$ OR $x = 8.5$

14 A student bought concert tickets online. The total cost, c , in dollars, of t tickets can be found using the function below.

$$c = 24.50t + 9.50$$

$$\begin{array}{r} 83 = 24.50x + 9.50 \\ -9.50 \\ \hline 73.50 \\ 24.50 \end{array} \quad \begin{array}{r} 24.50x \\ -9.50 \\ \hline 24.50 \end{array}$$

If the student spent a total of \$83 on tickets, how many tickets did he buy?

Record your answer and fill in the bubbles on your answer document.

$$x = 3$$

For what value of q is the equation $-13(q + 4) = 7q + 16$ is true? Bubble in your answer.

$$\begin{array}{r} -13q - 52 \\ -7q \\ \hline -20q - 52 \\ +52 \\ \hline -20q = 20 \\ -20 \\ \hline q = -1 \end{array} \quad \begin{array}{r} 7q + 16 \\ -7q \\ \hline 16 \\ +52 \\ \hline 68 \\ -20 \\ \hline 48 \end{array}$$

$$q = -1$$

What value of x makes the equation $4(5 - 7x) = 6 - 12x$ true? Bubble in your answer.

$$\begin{array}{r} 20 - 28x \\ +12x \\ \hline 20 - 16x \\ -20 \\ \hline -16x \\ -16 \\ \hline -x \\ -1 \end{array} \quad \begin{array}{r} 6 - 12x \\ +12x \\ \hline 6 \\ -20 \\ \hline -14 \\ -16 \\ \hline -2 \end{array}$$

$$x = 7/8$$

(189.)

8 What value of n makes the equation $4(0.5n - 3) = n - 0.25(12 - 8n)$ true?

- F 3
- G -9
- H 0
- J -15

$$\begin{array}{r} 2x - 12 \\ -3x \\ \hline -x - 12 \\ +12 \\ \hline -x \\ -1 \end{array} \quad \begin{array}{r} x - 3 + 2x \\ 3x - 3 \\ -3x \\ \hline -3 \\ +12 \\ \hline 9 \\ -1 \end{array}$$

$$x = -9$$

What value of x makes $\frac{1}{2}(3x + 4) = \frac{1}{2}x$ true?

- A 2
- B 1
- C -1
- D -2

$$\begin{array}{r} \frac{3}{2}x + 2 \\ -\frac{1}{2}x \\ \hline x + 2 \\ -2 \\ \hline x \end{array} \quad \begin{array}{r} \frac{1}{2}x \\ -\frac{3}{2}x \\ \hline -x \\ -1 \\ \hline -1 \end{array}$$

$$x = -2$$

$$\begin{array}{r} 1x + 2 = 0 \\ -2 \\ \hline 1x = -2 \end{array}$$

(599.)

8 What value of x makes the equation $-5x - (-7 - 4x) = -2(3x - 4)$ true?

F $x = 3$

G $x = 5$

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

J $x = \frac{1}{5}$

$$-5x + 7 + 4x \quad -6x + 8$$

$$-1x + 7 \quad -6x + 8$$
$$+ 6x \quad + 6x$$

$$5x + 7 \quad 8$$
$$- 7 \quad - 7$$

$$\frac{5x}{5} \quad \frac{1}{5}$$

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

(679.)

52 What is the solution to $0.3(12x - 16) = 0.4(12 - 3x)$? 5. Solve the following equation:

F -2

G 4

H 2

J -4

$$3.6x - 4.8 \quad 4.8 - 1.2x$$
$$+ 1.2x \quad + 1.2x$$

$$4.8x - 4.8 \quad 4.8$$
$$+ 4.8 \quad + 4.8$$

$$\frac{4.8x}{4.8} \quad \frac{9.6}{4.8}$$

$x = 2$

$$2(x - 3) = 5x + 7$$

$$2x - 6 \quad 5x + 7$$
$$- 5x \quad - 5x$$

A. $x = \frac{13}{7}$

B. $x = -\frac{13}{3}$

C. $x = \frac{13}{3}$

D. $x = \frac{3}{13}$

$$-3x - 6 \quad 7$$
$$+ 6 \quad + 6$$
$$-3x \quad 13$$
$$- 3 \quad - 3$$

$x = -\frac{13}{3}$

(589.)

11 What is the solution to $8x - 3(2x - 4) = 3(x - 6)$?

A 6

B 2

C 30

D No solution

$$8x - 6x + 12$$

$$2x + 12$$

$$- 3x$$

$$-1x + 12$$
$$- 12$$

$$-1x$$
$$= -1$$

$$3x - 18$$

$$3x - 18$$

$$- 3x$$

$$- 18$$

$$- 12$$

$$- 30$$
$$= -1$$

$x = 30$

(659.)

40 Which value of x makes the equation $0.75(x + 20) = 2 + 0.5(x - 2)$ true?

F 64

G -64

H 56

J -56

$$.75x + 15$$

$$.75x + 15$$

$$- .5x$$

$$.25x + 15$$

$$- 15$$

$$.25x$$
$$= -14$$

$$.25$$

$$2 + .5x - 1$$

$$1 + .5x$$

$$- .5x$$

$$1$$

$$- 15$$

$$- 14$$

$$- 25$$

$x = -56$

Laws of Exponents (A11B)

Simplify numeric and algebraic expressions using the **laws of exponents**, including **integral** and **rational exponents**

I can...

- Use product rule, quotient rule, power to a power rule and the negative exponent rule to simplify exponents

Notes:

PROPERTIES OF EXPONENTS	
Product of powers	$a^m a^n = a^{m+n}$
Quotient of powers	$\frac{a^m}{a^n} = a^{m-n}$
Power of a power	$(a^m)^n = a^{mn}$
Rational exponent	$a^{\frac{m}{n}} = \sqrt[n]{a^m}$
Negative exponent	$a^{-n} = \frac{1}{a^n}$

Sample Questions

51 Which expression is equivalent to $(7x^3)^2 (x^8)^{\frac{1}{2}}$?

A $14x^{10}$

B $49x^{10}$

C $14x^7$

D $49x^7$

$(7x^3)^2 = 49x^6$
 $(x^8)^{\frac{1}{2}} = x^4$
 $49x^6 \cdot x^4 = 49x^{10}$

(499)

6 The area of a rectangle is $54x^9y^8$ square yards. If the length of the rectangle is $6x^3y^4$ yards, which expression represents the width of the rectangle in yards?

F $9x^3y^2$

G $48x^6y^4$

H $9x^6y^4$

J $60x^{12}y^{12}$

$A = lw$
 $54x^9y^8 = \frac{6x^3y^4 \cdot ?}{6x^3y^4}$
 $9x^6y^4$

(499)

31 A circle has a radius of $6x^9y^5$ cm. The area of a circle can be found using $A = \pi r^2$. What is the area of this circle in square centimeters?

A $12\pi x^{18}y^{10}$

B $36\pi x^{18}y^{10}$

C $36\pi x^{12}y^7$

D $12\pi x^{12}y^7$

$A = \pi (6x^9y^5)^2$
 $36\pi x^{18}y^{10}$

(409)

10 Which expression is equivalent to $\frac{14a^4b^6c^{-10}}{8a^{-2}b^3c^{-5}}$?

F $\frac{7a^2b^3}{4c^{15}}$

G $\frac{6a^2b^9}{c^{15}}$

H $\frac{7a^6b^3}{4c^5}$

J $\frac{7b^2c^2}{4a^2}$

$4 - -2 = 6$
 $6 - 3 = 3$
 $-10 - -5 = -5$
 $\frac{7a^6b^3}{4c^5}$

(539)

12 A rectangular prism has a width of x inches, a length of x^2y inches, and a height of y^2 inches. Which expression represents the volume in cubic inches of this rectangular prism?

F $4x^2y^2$

G $4x^3y^3$

H x^2y^2

J x^3y^3

$V = lwh = x \cdot x^2y \cdot y^2 = x^3y^3$

Which expression is equivalent to $\frac{12x^6y^{-4}z^2}{3x^2y^{-6}z^3}$?

A $\frac{9x^8z^5}{y^{-10}}$

B $\frac{4x^8z^5}{y^{-10}}$

C $\frac{9x^4y^2}{z}$

D $\frac{4x^4y^2}{z}$

$-4 - -6 = 2$
 $-4 + 6 = 2$
 $2 - 3$
 $\frac{4x^4y^2}{z}$

(4690)

20 The expression $(x^3)(x^{-17})$ is equivalent to x^n . What is the value of n ?

Record your answer and fill in the bubbles on your answer document.

$3 + -17 = (-14)$

(4990)

6 Which expression is equivalent to $(144k^2r^{14})^{\frac{1}{2}}$ for all positive values of k and r ?

F $12kr^7$

G $72k^2r^{14}$

H $144kr^7$

J $12k^2r^{14}$

$144^{\frac{1}{2}} k^1 r^7$
 $12kr^7$

(4590)

28 Which expression is equivalent to $\frac{(q^3)^{-3}}{q^{-15}}$ for all values of q where the expression is defined?

F q^{27}

G $\frac{1}{q^{27}}$

H q^3

J $\frac{1}{q^3}$

$\frac{q^{-12}}{q^{-15}} = q^3$

$-12 - -15$
 $-12 + 15 = 3$

(6190)

49 Which expression is equivalent to $\frac{10q^5w^7}{2w^3} \cdot \frac{4(q^6)^2}{w^{-5}}$ for all values of q and w where the expression is defined?

A $\frac{32q^7}{w}$

B $20q^{17}w^9$

C $32q^7w^9$

D $20qw$

$5q^5w^4$ $\frac{4q^{12}}{w^{-5}}$

$\frac{5q^5w^4}{1} \cdot \frac{4q^{12}}{w^{-5}} = \frac{20q^{17}w^9}{w^{-5}}$

$20q^{17}w^9$

$4 - -5$

A rectangle has a length of x^3y^4 inches and a width of xy^7 inches. Which expression represents the ratio of the length of the rectangle to the width of the rectangle?

A $\frac{x^2}{y^3}$

B $\frac{x^3}{y^3}$

C $\frac{y^3}{x^3}$

D $\frac{y^3}{x^2}$

~~x^3y^4~~
 ~~xy^7~~
 $\frac{x^3y^4}{xy^7} = x^2y^{-3} = \frac{x^2}{y^3}$

Which expression is equivalent to $(64xy^4)^{\frac{1}{2}}$?

A $64x^{\frac{3}{2}}y^{\frac{9}{2}}$

B $8x^{\frac{1}{2}}y^2$

C $8x^{\frac{3}{2}}y^{\frac{9}{2}}$

D $32x^{\frac{1}{2}}y^2$

$64^{\frac{1}{2}}x^{\frac{1}{2}}y^2$
 $8x^{\frac{1}{2}}y^2$

$\frac{16}{8}$

Which expression is equivalent to $(4n^3p)^2(2n^2p^4)^3$?

A $128n^{36}p^{24}$

B $48n^{12}p^{14}$

C $128n^{12}p^{14}$

D $48n^{36}p^{24}$

$(4^2n^6p^2)(2^3n^6p^{12})$
 $16n^6p^2 \quad 8n^6p^{12}$
 $128n^{12}p^{14}$

Solve Linear Inequalities (A5B)

Solve linear inequalities in one variable, including those for which the application of the **distributive property** is necessary and for which **variables** are included on **both sides**

I can...

- Simplify by using the distribution property, combine like terms, and bring all variables to one side

Notes:

< > ≤ ≥

****Just like solving an equation, BUT when you divide by a negative number you FLIP the inequality symbol.**

What is the solution set for $8(3x - 2) \leq 2(7x + 12)$?

A $x \geq 4$

B $x \geq \frac{7}{5}$

C $x \leq 4$

D $x \leq \frac{7}{5}$

$$\begin{array}{r|l}
 24x - 16 & 14x + 24 \\
 -14x & -14x \\
 \hline
 10x - 16 & 24 \\
 +16 & +16 \\
 \hline
 10x & 40 \\
 \hline
 10 & 10 \\
 \hline
 x & \leq 4
 \end{array}$$

(6/7) **30** What is the solution set for $-4x + 10 \geq 5x + 55$?

F $x \geq 5$

G $x \geq 45$

H $x \leq -5$

J $x \leq -45$

$$\begin{array}{r|l}
 -5x & -5x \\
 -9x + 10 & 55 \\
 -10 & -10 \\
 \hline
 -9x & 45 \\
 -9 & -9 \\
 \hline
 x & \leq -5
 \end{array}$$

(5/9) **33** Which inequality describes all the solutions to $5(3 - x) < -2x + 6$?

A $x < -9$

B $x > 3$

C $x < -3$

D $x > 7$

$$\begin{array}{r|l}
 15 - 5x & -2x + 6 \\
 +2x & +2x \\
 \hline
 15 - 3x & 6 \\
 -15 & -15 \\
 \hline
 -3x & -9 \\
 -3 & -3 \\
 \hline
 x & > 3
 \end{array}$$

Add and Subtract Polynomials (A10A)

Add and subtract polynomials of degree one and degree two

I can...

- Simplify expressions by adding like terms
- Simplify expressions by subtracting like terms

Notes:

Adding Polynomials

Rule: add/combine like terms

$$x^4 + x^4 \quad \# + \#$$

$$x^3 + x^3$$

Ex: $(6x^3 - 1 + x^4) + (6 - 5x^2 - 5x^3 + 5x^4)$

$$1x^4 + 5 + 6x^3 - 5x^2$$

Example:

Combine $2x^2 + 5x - 4$ and $3x^2 - 2x + 3$

add

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

Subtracting Polynomials

Rule: If - in middle of ()

change - to +, change all signs inside ()

Ex: $(8a^2 - 4 + 6a) - (3a + 5a^2 + 7) + (4a^3 - a^4 + 5a^2)$

$$8a^2 + 3 + 3a + 4a^3 - a^4$$

(65) 2 Which expression is equivalent to $2x^2 + (4x - 6x^2) + 9 + (6x + 3)$?

F $-4x^2 - 2x + 12$

G $-4x^2 - 2x + 6$

H $-10x + 6$

J $18x + 12$

$$-4x^2 - 2x + 6$$

A teacher's age is 6 years greater than 2 times a student's age. A principal's age is 10 years greater than 3 times the student's age.

$$6 + 2x$$

$$10 + 3x$$

If x represents the student's age in years, which expression represents how many years older the principal is than the teacher?

A $4x + 1$

B $x + 4$

C $4x + 5$

D $x + 16$

$$(10 + 3x) - (6 + 2x)$$

$$(10 + 3x) + (6 + 2x)$$

$$4 + x$$

Multiply Polynomials (A10B)

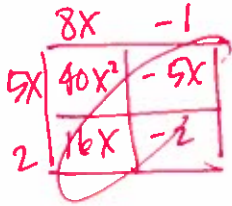
Multiply polynomials of degree one and degree two

I can...

- Multiply binomials (FOIL)
- Use distribution property and combine like terms to multiply terms

Notes:

Box Method or Distribution Method



$$40x^2 + 11x - 2$$

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

$$2x^2 - 10x + 1x - 5$$

$$2x^2 - 9x - 5$$

$$(x + 1)(3x^2 + 4x + 5)$$

$$3x^3 + 4x^2 + 5x + 3x^2 + 4x + 5$$

$$3x^3 + 7x^2 + 9x + 5$$

$$(8x - 1)(5x + 2) = 40x^2 + 16x - 5x - 2$$

$$40x^2 + 11x - 2$$

$$(5x - 6)(8x + 7)$$

$$40x^2 + 35x - 48x - 42$$

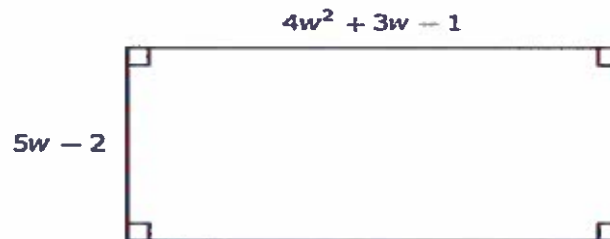
$$40x^2 - 13x - 42$$

$$(x^2 - 3x + 2)(4x - 3)$$

$$4x^3 - 3x^2 - 12x^2 + 9x + 8x - 6$$

$$4x^3 - 15x^2 + 17x - 6$$

A homeowner is building a flower bed in the backyard. He plans to put a layer of fertilizer over the entire flower bed. The diagram shows the flower bed and its dimensions in feet.



Which expression represents the area in square feet that the homeowner will cover with fertilizer?

A $20w^3 + 23w^2 + w - 2$

B $20w^3 + 7w^2 - 11w + 2$

C $8w^2 + 16w - 6$

D $4w^2 + 8w - 3$

$$(5w - 2)(4w^2 + 3w - 1)$$

$$20w^3 + 15w^2 - 5w - 8w^2 - 6w + 2$$

$$20w^3 + 7w^2 - 11w + 2$$

(59%)

36 Which expression is equivalent to $(h^2 + 9h - 1)(-4h + 3)$?

(F) $-4h^3 - 33h^2 + 31h - 3$

G $4h^3 + 39h^2 - 23h - 3$

H $-4h^3 - 39h^2 + 23h + 3$

J $4h^3 + 33h^2 - 31h + 3$

$-4h^3 + 3h^2 - 36h^2 + 27h$

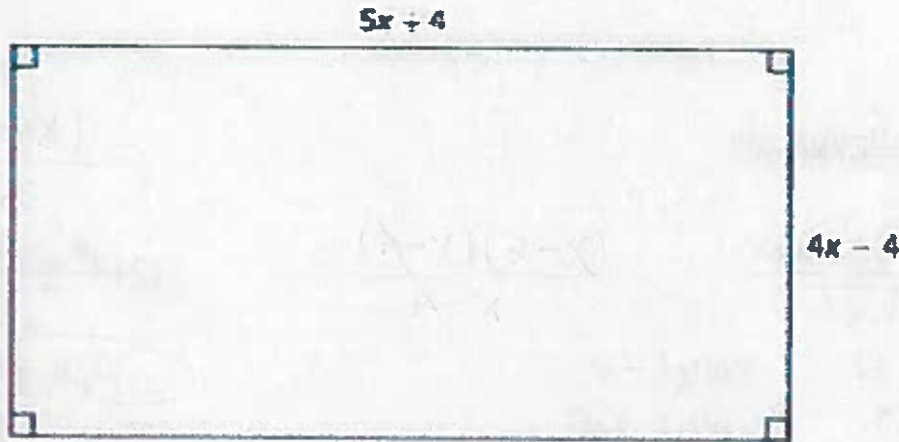
$+4h - 3$

$-4h^3 - 33h^2 + 31h - 3$

$(h^2 + 9h - 1)(-4h + 3)$
 $-4h^3 - 36h^2 + 4h$

(65%)

54 The diagram shows the floor plan of a storage facility. All dimensions are given in feet.



Which expression represents the area of the storage facility in square feet?

F $20x^2 + 36x - 16$

(G) $20x^2 - 4x - 16$

H $16x^2 - 16$

J $9x^2 - 16$

$(5x + 4)(4x - 4)$

$20x^2 - 20x + 16x - 16$

$20x^2 - 4x - 16$

Divide Polynomials (A10C)

Determine the **quotient** of a polynomial of degree one and polynomial of degree two when **divided by a polynomial** of degree one and polynomial of degree two when the degree of the divisor does not exceed the degree of the divided

I can...

- Multiply binomials
- Use distribution property and combine like terms to multiply terms

Notes:

**If something is in the numerator and the denominator then they cancel out!

Steps: ① Factor numerator. (top) → Swing: Divide
 ② Cancel out factor that is on top = bottom

Examples: $\frac{(x+3)\cancel{(x-6)}}{\cancel{(x-6)}} = (x+3)$

$\frac{\cancel{(x-5)}(x+1)}{\cancel{(x-5)}(x+4)} = \frac{x+1}{x+4}$

Sample Problems

11) $\frac{k^2 - 14k + 45}{k - 9}$

- A) $k - 12$ B) $k - 7$
 C) $k - 5$ D) $k - 10$

$\frac{(k-5)\cancel{(k-9)}}{\cancel{(k-9)}}$

12) $\frac{n^2 + 14n + 40}{n + 4}$

- A) $n + 10$ B) $n + 13$
 C) $n + 11$ D) $n + 9$

$\frac{\cancel{(n+4)}(n+10)}{\cancel{(n+4)}}$

13) $\frac{x^2 + 3x + 2}{x + 2}$

- A) $x - 9$ B) $x - 6$
 C) $x - 3$ D) $x + 1$

$\frac{(x+1)\cancel{(x+2)}}{\cancel{(x+2)}}$

14) $\frac{b^2 + b - 20}{b + 5}$

- A) $b - 6$ B) $b - 1$
 C) $b - 3$ D) $b - 4$

$\frac{-20}{5} = -4$

$\frac{\cancel{(b+5)}(b-4)}{\cancel{(b+5)}}$

$\begin{array}{r} 45 \\ 1 \ 45 \\ 3 \ 15 \\ -5 \ -9 \end{array}$

$\frac{2}{1} \overline{)2}$

What is the quotient of $(6x^2 - 7x - 5) \div (2x + 1)$ for all values of x where the expression is defined?

A $3x - 2 - \frac{7}{2x + 1}$

B $3x + 5$

C $3x - 5$

D $3x - 2 - \frac{3}{2x + 1}$

$$\frac{6x^2 - 7x - 5}{2x + 1}$$

$$\begin{array}{r} -30 \\ 1 \overline{) 30} \\ 2 \overline{) 15} \\ 3 \overline{) 10} \end{array}$$

$$\frac{(x+3)(x-10)}{6}$$

$$\left(x + \frac{1}{2}\right) \left(x - \frac{5}{2}\right)$$

$$\frac{(2x+1)(3x-5)}{2x+1}$$

Divide.

1) $(a^2 - 4a - 12) \div (a + 2)$ $\frac{-12}{1 \overline{) -12} \quad 2 \overline{) -6}}$
 $\frac{(a+2)(a-6)}{a+2} = \boxed{a-6}$

3) $(x^2 - 5x - 14) \div (x + 2)$ $\frac{-14}{2 \overline{) -7}}$
 $\frac{(x+2)(x-7)}{x+2} = \boxed{x-7}$

5) $(n^2 + 6n - 27) \div (n + 9)$ $\frac{-27}{-3 \overline{) 9}}$ $\frac{(n-3)(n+9)}{n+9}$
 $\boxed{n-3}$

7) $(x^2 - 7x - 30) \div (x - 10)$

$$\frac{-30}{3 \overline{) -10}}$$

$$\frac{(x+3)(x-10)}{x-10} = \boxed{x+3}$$

2) $(n^2 - 6n + 9) \div (n - 3)$ $\frac{9}{-3 \overline{) 3}}$
 $\frac{(n-3)(n-3)}{n-3} = \boxed{n-3}$

4) $(x^2 + 6x - 40) \div (x - 4)$ $\frac{-40}{10 \overline{) 4}}$
 $\frac{(x+10)(x-4)}{x-4} = \boxed{x+10}$

6) $(m^2 + 5m - 36) \div (m + 9)$ $\frac{-36}{9 \overline{) -4}}$
 $\frac{(m+9)(m-4)}{m+9} = \boxed{m-4}$

8) $(x^2 - 4x - 60) \div (x + 6)$

$$\frac{-60}{6 \overline{) -10}}$$

$$\frac{(x+6)(x-10)}{x+6} = \boxed{x-10}$$

Rewrite Polynomials (A10D)

Rewrite polynomial expressions of degree one and degree two in equivalent forms using the **distribution property**

I can...

- Use the distribution property to remove parenthesis
- Combine like terms

Notes: ~~organize~~

① Get rid of (). Multiply.

② combine like terms

Sample Questions

(73%)

15 Which expression is equivalent to $9q^2 - \frac{2}{3}(3q - 7) + 5q^2$?

A $9q^2 - \frac{5}{3}q - 3$

B $9q^2 - 2q - 3$

C $14q^2 - 2q + \frac{14}{3}$

D $14q^2 - \frac{5}{3}q - \frac{14}{3}$

$9x^2 - 2x + \frac{14}{3} + 5x^2$

$14x^2 - 2x + \frac{14}{3}$

47 Which expression is equivalent to $3c\left(\frac{1}{3}d - 9\right) - 7(c + 1) + d(c + 4)$?

A $2cd - 34c + 4d - 7$

B $2cd - 7c - 4$

C $2cd + 34c + 4d + 7$

D $2cd + 8c + 4$

$1cd - 27c - 7c - 7 + cd + 4d$
 $2cd - 34c + 4d - 7$

(12%)

2 Which expression is equivalent to $-28x^2 + 35x$?

F $7x(4x + 5)$ $28x^2 + 35x$

G $-7x(4x - 5)$ $-28x^2 + 35x$

H $7x(4x - 5)$ $28x^2 - 35x$

J $-7x(4x + 5)$ $-28x^2 - 35x$

(5%)

19 Which expression is equivalent to $2m\left(\frac{3}{2}m + 1\right) + 3\left(\frac{5}{3}m - 2\right)$?

A $3m^2 + 5m - 1$

$3m^2 + 2m + 5m - 6$

B $\frac{3}{4}m^2 + \frac{23}{9}m - 6$

$3m^2 + 7m - 6$

C $3m^2 + 7m - 6$

D $\frac{3}{4}m^2 + \frac{5}{9}m - 1$

In which step below does a mistake first appear in simplifying the expression $0.5(-12c + 6) - 3(c + 4) + 10(c - 5)$?

Step 1: $-6c + 3 - 3(c + 4) + 10(c - 5)$

Step 2: $-6c + 3 - 3c - 12 + 10(c - 5)$

Step 3: $-6c + 3 - 3c - 12 + 10c - 50$

Step 4: $7c - 41$

A Step 1

B Step 2

C Step 3

D Step 4

$-6c + 3 - 3c - 12 + 10c - 50$

$1c - 59$

Simplify Square Roots (A11A)

Simplify numerical radical expressions involving square roots

Notes:

- Steps:** (1) *Make a Factor tree. End when "branches" are prime #s (2, 3, 5, 7, 11...)*
- (2) *Pairs of #s go outside #s that don't have pairs stay inside*
- (3) *If there is more than one thing, then multiply together.*

**Always check w/ calculator*

Sample Questions

1) $\sqrt{36}$

- A) $3\sqrt{2}$ B) $4\sqrt{3}$
 C) 14 **D) 6**

2) $\sqrt{54}$

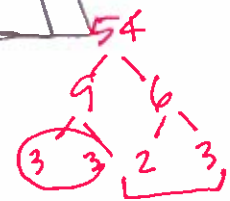
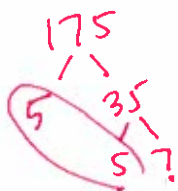
- A) $2\sqrt{2}$ B) $7\sqrt{7}$
C) $3\sqrt{6}$ D) $2\sqrt{7}$

3) $\sqrt{175} = 5\sqrt{7}$

- A) $14\sqrt{2}$ B) $2\sqrt{3}$
 C) 16 **D) $5\sqrt{7}$**

4) $\sqrt{125}$

- A) $7\sqrt{7}$ **B) $5\sqrt{5}$**
 C) $5\sqrt{2}$ D) $5\sqrt{3}$



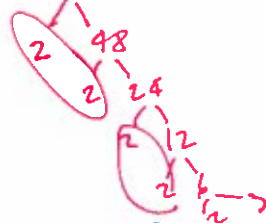
$3\sqrt{6} = 3\sqrt{2 \cdot 3}$

(80%)

53 Which expression is equivalent to $\sqrt{96}$?

- A) 24
 B) $8\sqrt{6}$
 C) 48
D) $4\sqrt{6}$

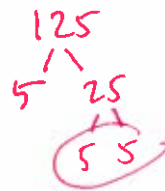
$2 \cdot 2 \sqrt{2 \cdot 3}$
 $4\sqrt{6}$



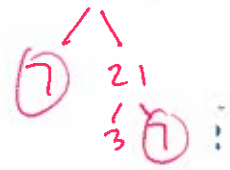
(79%)

1 Which expression is equivalent to $\sqrt{147}$?

- A) $3\sqrt{7}$
B) $7\sqrt{3}$
 C) $21\sqrt{7}$
 D) $49\sqrt{3}$



$5\sqrt{5}$



$7\sqrt{3}$