

**A.A.26: Solving Rationals 2: Solve algebraic proportions in one variable which result in linear or quadratic equations**

1 What is the value of  $x$  in the equation  $\frac{x}{2x+1} = \frac{4}{3}$ ?

1)  $-\frac{1}{5}$

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

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

4)  $-5$

2 If  $\frac{5}{n} - \frac{1}{2} = \frac{3}{6n}$ , what is the value of  $n$ ?

1)  $-2$

2)  $2$

3)  $9$

4)  $\frac{2}{7}$

3 Solve for  $r$ :  $\frac{1}{r} = \frac{1}{2} + \frac{1}{3}$

4 Solve for  $x$ :  $\frac{1}{15} + \frac{1}{10} = \frac{1}{x}$

5 Solve:  $\frac{2}{x} + 1 = \frac{1}{4}$

6 Solve for  $y$ :  $\frac{5}{3y} - \frac{6}{4y} = \frac{1}{6}$

7 Solve for  $x$ :  $\frac{5}{4x} - \frac{6}{3x} = \frac{1}{12}$

8 Solve for  $y$ :  $\frac{4}{5y-3} = \frac{2}{3y+4}$

9 Solve algebraically for  $x$ :  $\frac{1}{x} = \frac{x+1}{6}$

10 Solve for all values of  $x$  that satisfy the equation  
 $\frac{x}{x+3} = \frac{5}{x+7}$ .

11 Solve for all values of  $x$ :  $\frac{2}{x+1} = x$

12 Solve for the positive value of  $x$ :  $\frac{x}{3} - \frac{4}{x} = \frac{4}{3}$

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### Answer Section

1 ANS: 2

$$3x = 4(2x + 1)$$

$$3x = 8x + 4$$

$$-5x = 4$$

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

REF: 060612a

2 ANS: 3

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

$$\frac{10 - n}{2n} = \frac{3}{6n}$$

$$6n = 6n(10 - n)$$

$$1 = 10 - n$$

$$n = 9$$

REF: 010825a

3 ANS:

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

REF: 060213siii

4 ANS:

$$6$$

REF: 068015siii

5 ANS:

$$-\frac{8}{3}$$

REF: 068714siii

6 ANS:

$$1$$

REF: 018909siii

7 ANS:

$$-9$$

REF: 010204siii

8 ANS:  
-11

REF: 019705siii

9 ANS:

$$x(x+1) = 1 \times 6$$

$$x^2 + x = 6$$

$$2, -3. \quad x^2 + x - 6 = 0$$

$$(x+3)(x-2) = 0$$

$$x = -3 \text{ or } x = 2$$

REF: 010131a

10 ANS:

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

$$x^2 + 7x = 5x + 15$$

$$x^2 + 2x = 15$$

3, -5.

$$x^2 + 2x - 15 = 0$$

$$(x+5)(x-3) = 0$$

$$x = -5 \text{ or } x = 3$$

REF: 080439a

11 ANS:

$$\frac{2}{x+1} = x$$

$$x^2 + x = 2$$

$$1, -2. \quad x^2 + x - 2 = 0$$

$$(x+2)(x-1) = 0$$

$$x = -2 \text{ or } x = 1$$

REF: 080722b

12 ANS:

6

REF: 089809siii