

- Re-write the following decimals as fractions of integers. You do NOT have to reduce the fraction.
 - $0.81\overline{2} = 0.8122222\dots$
 - $0.5\overline{43} = 0.543434343\dots$
 - $0.\overline{401} = 0.401401401\dots$
- Simplify each of the following.
 - $\frac{x^2 - 3x}{x^2 + 4x - 21} \cdot \frac{6x + x^2 - 7}{x^2 - x}$
 - $\frac{1 - 9p^2}{-p^2 + 8p - 15} \div \frac{3p - 1}{p - 3}$
 - $\frac{x^2 - 6x + 29}{2x + x^2 - 35} - \frac{x - 3}{x + 7}$
 - $3\sqrt{7} + 2\sqrt{63} - 3\sqrt{112}$
 - $(2 - \sqrt{7})(2 + \sqrt{7})$
 - $(7 - 3\sqrt{5})^2$
 - $\frac{3}{\sqrt{19} + 4}$
 - $\frac{a^{-2}b^3}{a^{-5}b^0}$
 - $\frac{a^{-2} + b^3}{a^{-5} - b^0}$
 - $(-2xy^3)^3(-x^3yx^0)^{-2}$
 - $\frac{x^{-1}y^{-1}}{x^{-2}y^{-2}}$
 - $\frac{x^{-1} + y^{-1}}{x^{-2} - y^{-2}}$
- Simplify and re-write with positive exponents.
 - $(2^{-1} \cdot 5^{-1})^{-1}$
 - $(2^{-1} - 5^{-1})^{-1}$
 - $\frac{(2ab^3)^{-2}(-3a^2b^{-2})^{-3}}{(-2a^3b^0)^{-4}}$
 - $\left(\frac{-2x^{-3}y^2x^0}{3yx^{-2}}\right)^{-2}$
- Factor by completing the square.
 - $3x + 3x^2 - 60$
 - $4x^2 - 4x + 19$
 - $14x - 49x^2 - 1$
 - $17x + 3x^2 - 6$
- Find the exact value of $-x^2 + 3x - 8$ if $x = 3 - \sqrt{5}$.
- Solve each of the following equations.
 - $\frac{5x + 1}{28} + \frac{12x - 6}{56} = \frac{x - 1}{14}$
 - $8x^2 + x^3 = 33x$
 - $2(x - 3) - \frac{x}{2} = \frac{3}{2}(x - 4)$
 - $(2x - 1)^2 = (3x + 1)^2$
 - $|2x - 15| = 7$
 - $\left|\frac{1}{2}x - 3\right| - 2 = 5$
 - $3\left|\frac{1}{3}a + 10\right| - 4 = -1$
 - $3\left|\frac{1}{3}a + 10\right| + 4 = -1$
- Solve the formula $C = \frac{5}{9}(F - 32)$ for F .
- Graph the straight lines determined by $y = 2x - 3$ and $x + 6 = 2y$. Use your graph to find the coordinates of the intersection. Use algebraic methods to check your answer.
- One angle of a triangle is 28° . The difference between the other two sides is 48° . Find the angles in this triangle.
- A soda costs \$1.20 and a sandwich costs \$2.50. We purchased some. The number of sodas is one less than twice the number of sandwiches. We paid a total of \$38. How many sodas and sandwiches did we purchase?
- Seven times a number is fifteen less than -4 times the opposite of a number. Find this number.
- One number is sixteen less than four times another number. Find this number if their sum is -26 .

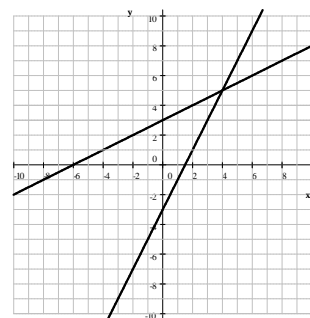
13. One number is sixteen less than four times another number. Find this number if their product is 20.
14. We threw an object upward from the top of a 880 ft tall building. t seconds after we dropped it, the distance of the object from the ground (measured in feet) is

$$d = -16t^2 + 96t + 880$$

- a) Find d if $t = 0$ s. c) Find d if $t = 3$ s. e) Find d if $t = 7$ s.
 b) Find d if $t = 1$ s. d) Find d if $t = 4$ s. f) How long until the object hits the ground?

Answers

- 1.) a) $\frac{731}{900}$ b) $\frac{538}{990}$ c) $\frac{401}{999}$
- 2.) a) 1 b) $\frac{3p+1}{p-5}$ c) $\frac{2}{x-5}$ d) $-3\sqrt{7}$ e) -3 f) $94 - 42\sqrt{5}$ g) $\sqrt{19} - 4$ h) a^3b^3
- i) $-\frac{a^3 + a^5b^3}{a^5 - 1}$ j) $-\frac{8y^7}{x^3}$ k) xy l) $\frac{xy}{y-x}$ 3.) a) 10 b) $\frac{10}{3}$ c) $-\frac{4a^4}{27}$ d) $\frac{9x^2}{4y^2}$
- 4.) a) $3(x+5)(x-4)$ b) does not factor c) $-(7x-1)^2$
- d) $3(x+6)\left(x-\frac{1}{3}\right) = (x+6)(3x-1)$ 5.) $-13 + 3\sqrt{5}$
- 6.) a) 0 b) 3, 0, -11 c) identity, all numbers are solution d) 0, -2 e) 4, 11 f) -8, 20
- g) -33, -27 h) no solution 7.) $F = \frac{9}{5}C + 32$ or $F = \frac{9C + 160}{5}$ 8.) (4, 5)



check: (4, 5) is on $y = 2x - 3$ because $5 = 2(4) - 3$ and (4, 5) is on $x + 6 = 2y$ because $4 + 6 = 2(5)$

- 9.) $28^\circ, 52^\circ, 100^\circ$ 10.) 15 sodas and 8 sandwiches 11.) -5 12.) -2 and -24
- 13.) -1 with -20 and 4 with 5
- 14.) a) 880 ft b) 960 ft c) 1024 ft d) 1008 ft e) 768 ft f) 11 s