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3. Solve each equation. Verify the solution.

a) $-20.5 = 3b + 16.7$

-16.7 -16.7

$\frac{-37.2}{3} = \frac{3b}{3}$

$-12.4 = b$

b) $\frac{t}{3} + 1.2 = -2.2$

(3) (3) (3)

$t + 3.6 = -6.6$

-3.6 -3.6

$t = 10.2$

c) $-8.5 = 6.3 - \frac{w}{2}$

(2) (2) (2)

$-17 = 12.6 - w$

-12.6 -12.6

$\frac{-29.6}{-1} = \frac{-w}{-1}$

$29.6 = w$

d) $-2.3(x + 25.5) = -52.9$

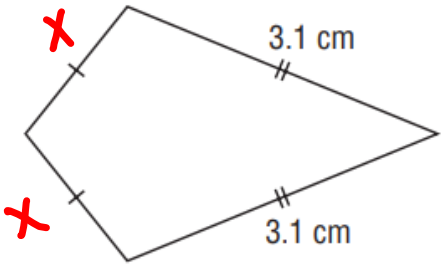
$-2.3x - 58.65 = -52.9$

$+58.65$ $+58.65$

$\frac{-2.3x}{-2.3} = \frac{5.75}{-2.3}$

$x = -2.5$

4. A kite has longer sides of length 3.1 cm and a perimeter of 8.4 cm.



a) Write an equation that can be used to determine the length of a shorter side.

b) Solve the equation.

c) Verify the solution.

$x + x + 3.1 + 3.1 = 8.4$

a) $2x + 6.2 = 8.4$

b) $2x + 6.2 = 8.4$ (−6.2 −6.2)

$\frac{2x}{2} = \frac{2.2}{2}$

$x = 1.1$

c) Verify

$2x + 6.2$ → 8.4

$2(1.1) + 6.2$

$2.2 + 6.2$

8.4 same

7. Solve each equation. Verify the solution.

a) $\frac{-72}{a} = -4.5, a \neq 0$

$-72 = -4.5a$

$\frac{-72}{-4.5} = \frac{-4.5a}{-4.5}$

$16 = a$

b) $-\frac{1}{3} + 2m = -\frac{1}{5}$

$-5 + 30m = -3$

$+5 \quad +5$

$\frac{30m}{30} = \frac{2}{30}$

$m = \frac{1}{15}$

c) $12.5x = 6.2x + 88$

$-6.2x \quad -6.2x$

$\frac{6.3x}{6.3} = \frac{88}{6.3}$

$x = \frac{88}{6.3}$

d) $2.1g - 0.3 = -3.3g - 30$

$+3.3g \quad +3.3g$

$5.4g - 0.3 = -30$

$+0.3 \quad +0.3$

$\frac{5.4g}{5.4} = \frac{-29.7}{5.4}$

$g = -5.5$

e) $\frac{3}{2}x + \frac{4}{3} = \frac{5}{8}x + \frac{5}{2}$

(24) (24) (24) (24)

$36x + 32 = 15x + 60$

$-15x \quad -15x$

$21x + 32 = 60$

$-32 \quad -32$

$\frac{21x}{21} = \frac{28}{21}$

$x = \frac{28}{21}$

f) $5.4(2 - p) = -1.4(p + 2)$

$10.8 - 5.4p = -1.4p - 2.8$

$+5.4p \quad +5.4p$

$10.8 = 4p - 2.8$

$+2.8 \quad +2.8$

$\frac{13.6}{4} = \frac{4p}{4}$

$p = 3.4$

8. Kevin is planning to rent a car for one week. Company A charges $200 per week, with no charge for the distance driven. For the same car, Company B charges a $25 administration fee plus $0.35 per kilometre. Determine the distance driven that will result in equal costs at the two companies.

a) Define a variable and write an equation that can be used to solve the problem.

b) Use the equation to solve the problem.

c) Verify the solution.

Company A

a) $C = 200$

Company B

$C = 25 + 0.35d$

b) $200 = 25 + 0.35d$

$200 - 25 = 25 - 25 + 0.35d$

$175 = 0.35d$

$\frac{175}{0.35} = \frac{0.35d}{0.35}$

$500 = d$

c) Verify

200 $25 + 0.35d$

$25 + 0.35(500)$

$25 + 175$

200

same

10. Define a variable, then write an inequality that describes each situation.

a) Persons under 18 are not admitted. $p < 18$

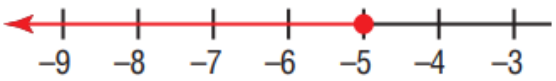
b) A person must be at least 90 cm tall to go on an amusement park ride. $p \geq 90$

c) Horton can spend a maximum of $50. $p \leq 50$

d) A game is recommended for players 5 years and older. $p \geq 5$

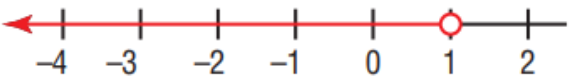
11. Write the inequality represented by each number line.

a)



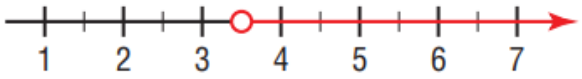
$x \leq -5$

b)



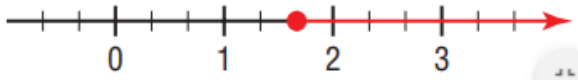
$x < 1$

c)



$x > 3.5$

d)



$x \geq 1\frac{2}{3}$

15. The cost of a prom is \$400 to rent a hall, and \$30 per person for the meal. The prom committee has \$10 000. How many students can attend?

a) Define a variable and write an inequality to model this problem.

b) Solve the inequality, then graph the solution.

Let "p" represent the number of people

b) $30p + 400 \leq 10\,000$

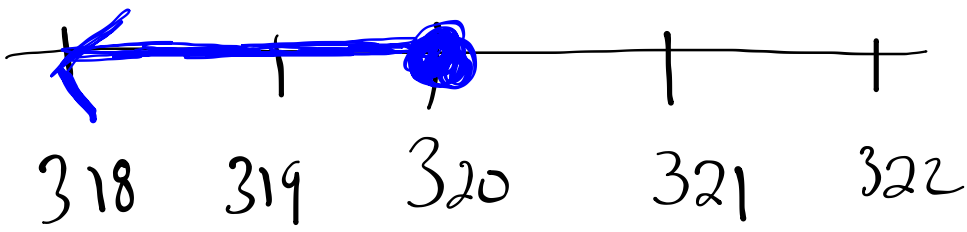
c) $30p + 400 \leq 10\,000$

$-400 \quad -400$

$30p \leq 9600$

$\frac{30p}{30} \leq \frac{9600}{30}$

$p \leq 320$



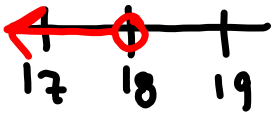
16. Solve each inequality.

Verify and graph the solution.

a) $7 + y < 25$

$-7 \quad -7$

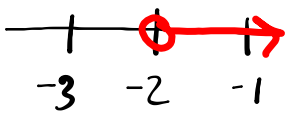
$y < 18$



b) $-7y < 14$

$\frac{-7y}{-7} < \frac{14}{-7}$

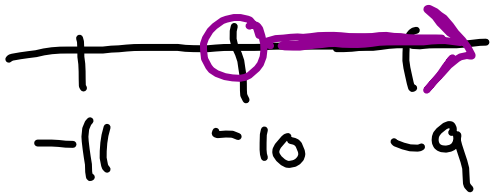
$y > -2$



c) $\frac{x}{4} > -2.5$

$(4) \quad (4)$

$x > -10$

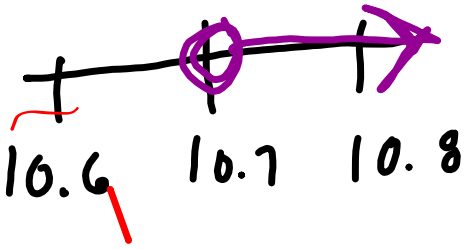


d) $5.2 - y < -5.5$

$-5.2 \quad -5.2$

$\frac{-y}{-1} < \frac{-10.7}{-1}$

$y > 10.7$

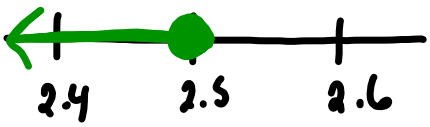


e) $13.5 + 2y \leq 18.5$

-13.5 -13.5

$\frac{2y}{2} \leq \frac{5}{2}$

$y \leq 2.5$



f) $24 + 3a \leq -6 + 7a$

$-3a$ $-3a$

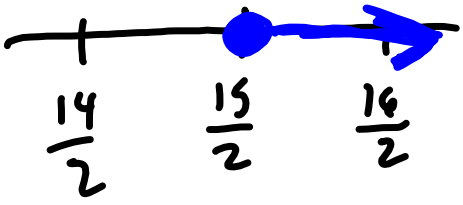
$+6$ $+6$

$24 \leq -6 + 4a$

$\frac{30}{4} \leq \frac{4a}{4}$

$\frac{15}{2} \leq a$

$a \geq \frac{15}{2}$



Practice Test

Page 310(Practice test)

2. Solve each equation.

a) $-3x - 0.7 = -7$

$+0.7 \quad +0.7$

$\frac{-3x}{-3} = \frac{-6.3}{-3}$

$x = 2.1$

b) $\frac{26}{x} = 5 - 1.5$

$(x) \quad (x) \quad (x)$

$26 = 5x - 1.5x$

$\frac{26}{3.5} = \frac{3.5x}{3.5}$

$x = \frac{26}{3.5}$

c) $\frac{r}{3} + 5.4 = -3.2$

$(3) \quad (3) \quad (3)$

$r + 16.2 = -9.6$

$-16.2 \quad -16.2$

$r = -25.8$

d) $2.4w - 5.6 = 3.7 + 1.9w$

$-1.9w \quad -1.9w$

$0.5w - 5.6 = 3.7$

$+5.6 \quad +5.6$

$\frac{0.5w}{0.5} = \frac{9.3}{0.5}$

$w = 18.6$

e) $\frac{1}{4}c - \frac{7}{2} = \frac{1}{2}c + \frac{3}{4}$

$\cdot(4)$ (4) (4) (4)

$c - 14 = 2c + 3$

$-c$ $-c$

$-14 = c + 3$

-3 -3

$-17 = c$

f) $4.5(1.2 - m) = 2.4(-2m + 2.1)$

$5.4 - 4.5m = -4.8m + 5.04$

$+4.8m$ $+4.8m$

$5.4 + 0.3m = 5.04$

-5.4 -5.4

$\frac{0.3m}{0.3} = \frac{-0.36}{0.3}$

$m = -1.2$

3. To cater a lunch, Tina's Catering charges \$100, plus \$15 per meal. Norman's Catering charges \$25, plus \$20 per meal. Determine the number of meals that will result in equal costs at the two companies.

a) Define a variable, then write an equation that can be used to solve this problem.

b) Solve the equation. Verify the solution.

m => # of meals

a) Tina's

$15m + 100$

Norman's

$20m + 25$

b) $15m + 100 = 20m + 25$

$-15m \quad -15m$

$100 = 5m + 25$

$-25 \quad -25$

$\frac{75}{5} = \frac{5m}{5}$

$m = 15$

4. Solve each inequality. Verify, then graph the solution.

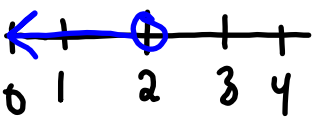
a) $5 - t > 3$

$-5 \quad -5$

$-t > -2$

$\div -1 \quad \div -1$

$t < 2$



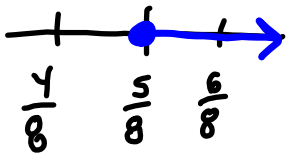
b) $3(t + 2) \geq 11 - 5t$

$3t + 6 \geq 11 - 5t$ (+5t +5t)

$8t + 6 \geq 11$ (−6 −6)

$\frac{8t}{8} \geq \frac{5}{8}$

$t \geq \frac{5}{8}$



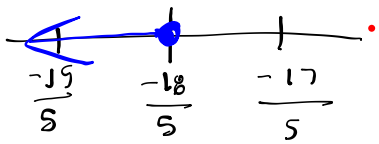
c) $\frac{m}{4} + 5 \leq \frac{1}{2} - m$ (×4 ×4 ×4 ×4)

$m + 20 \leq 2 - 4m$ (+4m +4m)

$5m + 20 \leq 2$ (−20 −20)

$\frac{5m}{5} \leq \frac{-18}{5}$

$m \leq \frac{-18}{5}$



5. A car rental company charges $24.95 per day plus $0.35 per kilometre.
A business person is allowed $50 each day for travel expenses.
How far can the business person travel without exceeding her daily budget?

a) Define a variable, then write an inequality to solve the problem.

b) Solve the problem. Graph the solution.
How do you know that your answer is correct?

a) Let "K" represent number of kilometres

b) $24.95 + 0.35K \leq 50$

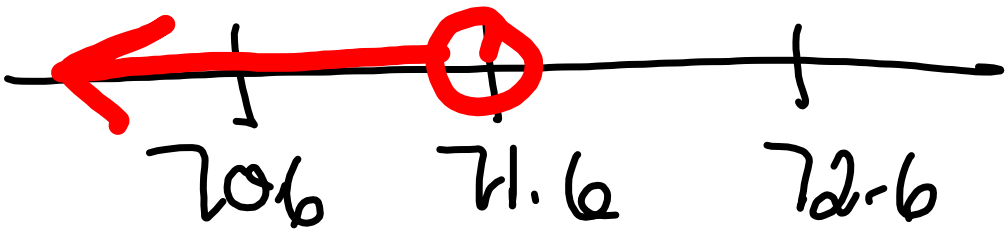
c) $24.95 + 0.35K < 50$

$-24.95 \quad -24.95$

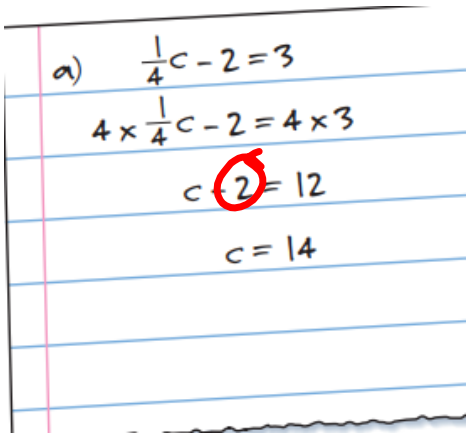
$0.35K < 25.05$

$\frac{0.35K}{0.35} < \frac{25.05}{0.35}$

$K < 71.6$



6. Two students wrote these solutions on a test. Identify the errors. Write a correct and complete algebraic solution.

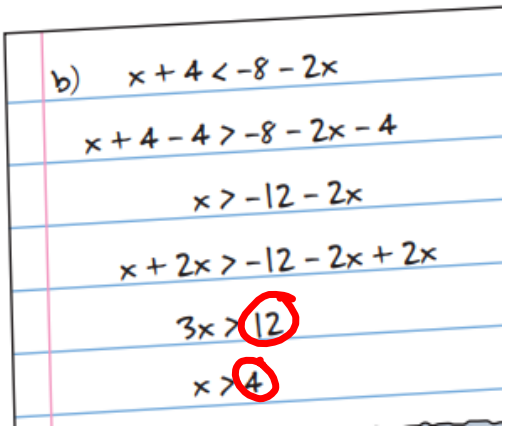


$\frac{1}{4}c - 2 = 3$ (4) (4) (4)

$c - 8 = 12$ +8 +8

$c = 20$

6. Two students wrote these solutions on a test. Identify the errors. Write a correct and complete algebraic solution.



$x+4 < -8-2x$ (+2x, +2x)

$3x+4 < -8$ (−4, −4)

$\frac{3x}{3} < \frac{-12}{3}$

$x < -4$