Math 60, Sections 2.3-2.4 Group Activity Name: Solutions

Section 2.3 Solving One-Step Equations

1. To prepare for our class game, solve and check these one-step equations with your group. Show your operation and write the solution set. Make sure everyone in your group understands the process.

a. $y+1=-10$

$-1 \quad -1$

$y=-11$

$\{-11\}$

Check

$-11+1 \stackrel{?}{=} -10$

$-10=-10$ ✓

b. $z-12=5$

$+12 \quad +12$

$z=17$

$\{17\}$

Check!

$17-12 \stackrel{?}{=} 5$

$5=5$ ✓

c. $15=-3x$

$\frac{15}{-3} = \frac{-3x}{-3}$

$-5=x$

$\{-5\}$

Check:

$15 \stackrel{?}{=} -3(-5)$

$15=15$ ✓

d. $-7z=8$

$\frac{-7z}{-7} = \frac{8}{-7}$

$z=-\frac{8}{7}$

$\{-\frac{8}{7}\}$

$\frac{-7}{1}\left(-\frac{8}{7}\right) \stackrel{?}{=} 8$

$8=8$ ✓

e. $x-(-7)=7$

$x+7=7$

$-7 \quad -7$

$x=0$

$\{0\}$

$0-(-7) \stackrel{?}{=} 7$

$+7=7$ ✓

f. $t-\frac{2}{3}=-\frac{7}{6}$

$+\frac{2}{3} \quad +\frac{2}{3}\cdot\frac{2}{2}$

$t=\frac{-7}{6}+\frac{4}{6}$

$t=-\frac{3}{6}$

$t=-\frac{1}{2}$ $\{-\frac{1}{2}\}$

$-\frac{1}{2}\cdot\frac{3}{3}-\frac{2}{3}\cdot\frac{2}{2} \stackrel{?}{=} -\frac{7}{6}$

$-\frac{3}{6}-\frac{4}{6}=-\frac{7}{6}$

$-\frac{7}{6}=-\frac{7}{6}$ ✓

g. $-\frac{1}{5}x=-20$

$\left(-\frac{5}{1}\right)\left(-\frac{1}{5}\right)x=-20\cdot\left(-\frac{5}{1}\right)$

$x=100$

$\{100\}$

$-\frac{1}{5}(100) \stackrel{?}{=} -20$

$-20=-20$ ✓

h. $\frac{x}{12}=-\frac{3}{4}$

$12\cdot\frac{x}{12}=-\frac{3}{4}\cdot 12$

$x=-9$

$\{-9\}$

$-\frac{9}{12} \stackrel{?}{=} -\frac{3}{4}$

$-\frac{3}{4}=-\frac{3}{4}$ ✓

2. Solving one-step equations Kahoot Game: https://play.kahoot.it/#/k/6e8041d6-0e44-4140-93a9-23ce4e1bbde1. Have one person from your group with a smartphone go to kahoot.it.

Write down the equation and your step to solve it in each box.

1. $n+14=37$ $-14 \quad -14$ $n=23$	2. $5\cdot\frac{x}{5}=6\cdot5$ $x=30$	3. $y-11=18$ $+11 \quad +11$ $y=29$
4. $\frac{8m}{8}=\frac{56}{8}$ $m=7$	5. $p-9=16$ $+9 \quad +9$ $p=25$	6. *non-math question
7. $\frac{15m}{15}=\frac{60}{15}$ $m=4$	8. $3\cdot\frac{t}{3}=9\cdot3$ $t=27$	9. $z+8=44$ $-8 \quad -8$ $z=36$
10. $\frac{4g}{4}=\frac{8}{4}$ $g=2$	11. $r+12=37$ $-12 \quad -12$ $r=25$	12. *
13. $7\cdot\frac{k}{7}=21\cdot7$ $k=147$	14. $g-16=-2$ $+16 \quad +16$ $g=14$	15. $\frac{7p}{7}=\frac{-42}{7}$ $p=-6$
16. $c+16=-20$ $-16 \quad -16$ $c=-36$	17. $-5\cdot\frac{w}{-5}=15\cdot-5$ $w=-75$	18. *
19. $\frac{-12p}{-12}=\frac{12}{-12}$ $p=-1$	20. $m-23=-7$ $+23 \quad +23$ $m=16$	21. $\frac{-8a}{-8}=\frac{0}{-8}$ $a=0$
22. $7\cdot\frac{f}{7}=-7\cdot7$ $f=-49$	23. $n+9=-9$ $-9 \quad -9$ $n=-18$	24. *
25. $d-40=-55$ $+40 \quad +40$ $d=-15$	26. $\cancel{-6}\cdot\frac{s}{\cancel{-6}}=-12\cdot-6$ $s=72$	27. $10+e=-34$ $-10 \quad -10$ $e=-44$
28. $\frac{16x}{16}=\frac{-32}{16}$ $x=-2$	29. $-7\cdot\frac{m}{-7}=-3\cdot-7$ $m=21$	30. *

3. Write and solve an equation for each scenario given. Include units in your answer.

a. The circumference of a frisbee is 20π cm. Find the radius.

$C = 2\pi r$

$\frac{20\cancel{\pi}}{2\cancel{\pi}} = \frac{\cancel{2\pi} r}{\cancel{2\pi}}$ solve for r

$10 = r$

The radius is 10 cm.

Check $C = 2\pi(10) = 20\pi$ cm ✓

b. A fish tank has a volume of 2598.528 cubic inches. The base is 20.1 inches by 10.1 inches. Find the height of the tank.

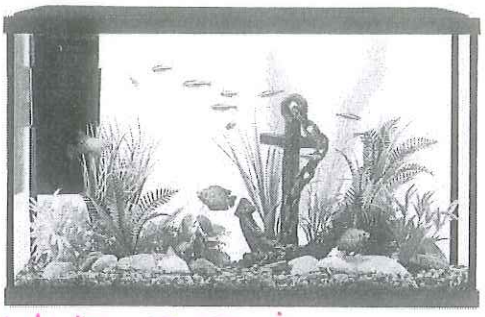
$V = l \cdot w \cdot h$

$2598.528 = (20.1)(10.1)h$

$\frac{2598.528}{203.01} = \frac{\cancel{203.01}h}{\cancel{203.01}}$

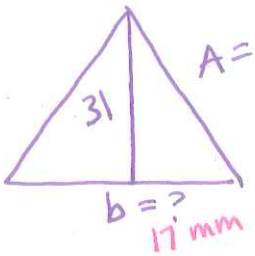
$12.8 \text{ in} = h$

Check $V = (20.1)(10.1)(12.8) = 2598.528$ ✓



The height is 12.8 in.

c. A triangle has a height of 31 mm and an area of 263.5 mm^2. Find the base of the triangle. Hint: Draw a picture.



$A = 263.5 \text{ mm}^2$

$A = \frac{1}{2} b \cdot h$

$A = \frac{1}{2} b \cdot 31$

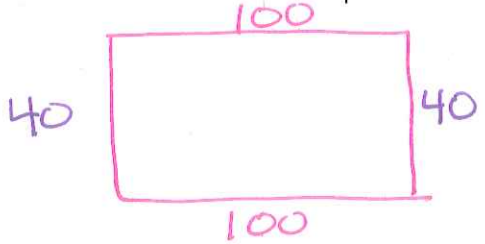
$263.5 = \frac{1}{2} b \cdot 31$

$\frac{263.5}{15.5} = \frac{15.5b}{15.5}$

$b = 17$

The base is 17 mm.

d. A rectangular field has a fence around it that is 280 yards around. If the field is 100 yards long, how wide is it? Hint: Draw a picture. Can you write an equation to model this?



$P = 280$ yards

$P = 2l + 2w$

$280 = 2(100) + 2w$

$280 = 200 + 2w$

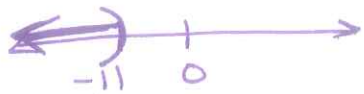
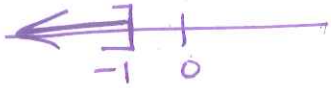
$-200 \quad -200$

$\frac{80}{2} = \frac{2w}{2}$

$w = 40$

2-step solving chapter 3

4. To prepare for another class game, solve each inequality and graph each solution on a number line. Write the solution set in interval and set-builder notation. Make sure each person understands the process.

Solve the Inequality	Number Line Graph	Interval	Set-builder Notation
a. $x-4<-15$ $+4 \quad +4$ $x<-11$		$(-\infty,-11)$	$\{x \mid x<-11\}$
b. $-5y \le 10$ $\frac{-5y}{-5} \le \frac{10}{-5}$ reverse the inequality $y \ge -2$		$[-2,\infty)$	$\{y \mid y \ge -2\}$ $\ge$ = webwork
c. $\frac{3}{1} \cdot 9 > \frac{1}{3}t \cdot \frac{3}{1}$ $27 > t$ $t < 27$ put variable on the left		$(-\infty,27)$	$\{t \mid t<27\}$
d. $-9 \ge -8+x$ $+8 \quad +8$ $-1 \ge x$ $x \le -1$		$(-\infty,-1]$	$\{x \mid x \le -1\}$

5. Find a partner from a different table and introduce yourselves. Write their name in the space provided. Get ready for the first inequality to solve. You will solve each one with a different partner.

Partner	Solve the Inequality	Number Line Graph	Interval	Set-builder Notation
	a.			
	b.			
	c.			
	d.			
	e.			

More Practice

6. Solve and check each equation and write the solution set.

a. $-9+x=-1$

$+9 \quad +9$

$x=8$

$\{8\}$

$-9+8 \stackrel{?}{=} -1$

$-1=-1$ ✓

b. $\frac{1}{2}r=-20$ $\cdot 2$

$r=-40$

$\{-40\}$

$\frac{1}{2}(-40) \stackrel{?}{=} -20$

$-20=-20$ ✓

c. $-k=\frac{5}{2}$ $\cdot -1$

$k=-\frac{5}{2}$

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

$-(-\frac{5}{2}) \stackrel{?}{=} \frac{5}{2}$

$\frac{5}{2}=\frac{5}{2}$ ✓

d. $4=x-15$

$+15 \quad +15$

$19=x$ or

$x=19$

$\{19\}$

$4 \stackrel{?}{=} 19-15$

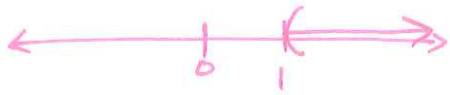
$4=4$ ✓

7. Solve each inequality and draw the solution set on a number line. Write the solution set in interval and set-builder notation.

a. $-2+t>-1$

$+2 \quad +2$

$t>1$



$(1,\infty)$

$\{t \mid t>1\}$

b. $-\frac{3}{4}y \le \frac{5}{4}$ $\cdot -\frac{4}{3}$

flip

$y \ge -\frac{5}{3}$

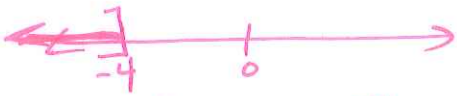
$[-5/3,\infty)$

$\{y \mid y \ge -\frac{5}{3}\}$

c. $5p \le -20$

$\frac{5p}{5} \le \frac{-20}{5}$

$p \le -4$



$(-\infty,-4]$

$\{p \mid p \le -4\}$

d. $11>x-9$

$+9 \quad +9$

$20>x$

$x<20$

$(-\infty,20)$

$\{x \mid x<20\}$