VideoText *Interactive*

HomeSchool and Independent Study Sampler

Print Materials
for
"Algebra: A Complete Course"

Unit II, Part A, Lesson 4 –
"Combinations"

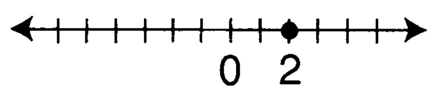
Course Notes (2 pages)
Student WorkText (5 pages)
Solutions Manual (2 pages)
Quizzes – Forms A and B (4 pages)
Quiz Solutions (4 pages)

COURSE NOTE 51

COMBINATIONS

$$
\begin{array}{lrcl}
 & 3w + 4 & = & 10 \\
\text{Add } {}^{-}4 & 3w + 4 + {}^{-}4 & = & 10 + {}^{-}4 \\
 & 3w & = & 6 \\
\text{Multiply } \frac{1}{3} & \frac{1}{3}(3w) & = & \frac{1}{3}\ (6) \\
 & 1w & = & \frac{6}{3} \text{ or } 2 \\
\text{Check} & 3(2) + 4 & = & 10 \\
 & 6 + 4 & = & 10 \\
 & 10 & = & 10 \qquad \text{True}
\end{array}
$$

$S = \{2\}$



Or ...

$$
\begin{array}{lrcl}
 & 3w + 4 & = & 10 \\
\text{Multiply } \frac{1}{3} & \frac{1}{3}(3w + 4) & = & \frac{1}{3}(10) \\
 & w + \frac{4}{3} & = & \frac{10}{3} \\
\text{Add } \frac{-4}{3} & w + \frac{4}{3} + \frac{-4}{3} & = & \frac{10}{3} + \frac{-4}{3} \\
 & w & = & \frac{6}{3} \text{ or } 2 \checkmark
\end{array}
$$

$$^{-}6x - 2 \geq 40$$

Add 2 $\quad ^{-}6x - 2 + {}^{+}2 \geq 40 + {}^{+}2$

Multiply $\frac{1}{-6}$ $\quad \frac{\cancel{1}}{\cancel{^{-}6}}\left(-6x\right) \leq \frac{1}{\cancel{^{-}6}}(42)$

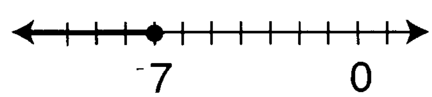
$$1x \leq \frac{42}{^{-}6} \text{ or } ^{-}7 \quad ✓$$

Check $\quad ^{-}6\left(^{-}10\right) - 2 \geq 40$

$$60 - 2 \geq 40$$

$$58 \geq 40 \qquad \text{True}$$

$$S = \left\{x \mid x \leq {}^{-}7\right\}$$



LESSON 4 Combinations

Objective: To be able to solve simple equations or inequalities by making 0's and 1's appropriately.

Important Terms:

"The Opposite Of" – a real number which has the same absolute value as a given number, but the opposite sign, so that the sum of the two numbers is 0. For example. the opposite of $^+3$ is -3, because $^+3 + (-3) = 0$.

Reciprocal – a real number (not equal to 0) which has the same sign as a given number but which, in fraction form, has the numerator and denominator interchanged, so that the product of the two numbers is 1. For example, the reciprocal of $\frac{^+2}{3}$ is $\frac{3}{^+2}$ because $\frac{^+2}{3} \cdot \frac{^+3}{2} = \frac{6}{6}$ or 1.

Example 1: Find the solution set for the following open sentence by making the appropriate 0's and 1's.

$$3x - 8 = 34$$

Solution: In this equation, we are trying to find appropriate values for "1" of the placeholder. That means we want only 1x, so we must make a "1" out of the 3 and a "0" out of the –8.

Example 1 cont'd:

Method 1

We make the "1" first by multiplying by $\frac{1}{3}$ (the reciprocal of 3 or $\frac{3}{1}$).

$$3x - 8 = 34$$

$$\textbf{Mult. } \frac{1}{3} \qquad \frac{1}{3}(3x - 8) = \frac{1}{3}(34)$$

$$1x - \frac{8}{3} = \frac{34}{3}$$

Now make a zero.

$$\textbf{Add } \frac{8}{3} \qquad 1x - \frac{8}{3} + \frac{8}{3} = \frac{34}{3} + \frac{8}{3}$$

$$1x + 0 = \frac{42}{3}$$

$$1x = 14$$

We check this solution by substitution in the original equation.

$$3(14) - 8 = 34$$

$$42 - 8 = 34$$

$$34 = 34 \quad \text{It checks.}$$

The solution set is S = { 14).

Method 2

We make the "0" first by adding +8 (the opposite of –8).

$$3x - 8 = 34$$

$$\textbf{Add } {}^{+}8 \qquad 3x - 8 + ({}^{+}8) = 34 + ({}^{+}8)$$

$$3x + 0 = 42$$

$$3x = 42$$

Now make a 1. Multiply by $\frac{1}{3}$ (the reciprocal of 3 or $\frac{3}{1}$).

$$\textbf{Mult. } \frac{1}{3} \qquad \frac{1}{3}(3x) = \frac{1}{3}(42)$$

$$\frac{3}{3}x = \frac{42}{3}$$

$$1\,x = 14$$

Example 1 cont'd:

We already know this is the correct answer.

Notice that it makes no difference whether we make the 1 or 0 first. Upon closer examination, however, you might prefer to make the 0 first as that may possibly eliminate some of the fractions which may occur in the solution process.

Example 2: Find the solution set for each of the following open sentences by making the appropriate 0's and 1's.

a. $^-3x + 1 < {}^-26$ **b.** $\frac{3n}{4} - 6 \geq 3$

Solution: **a.** We want to make a "0" out of the +1, so we add –1 (its opposite).

$$
\begin{array}{lrcl}
 & ^-3x + 1 & < & ^-26 \\
\textbf{Add } {}^-\textbf{1} & ^-3x + 1 + (^-1) & < & ^-26 + (^-1) \\
 & ^-3x & < & ^-27
\end{array}
$$

We want to make a "1" out of the –3, so we multiply by $\frac{1}{^-3}$ (its reciprocal).

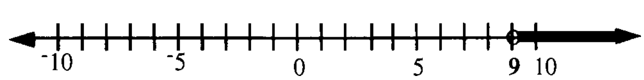
$$
\begin{array}{lrcl}
\textbf{Mult. } \frac{\mathbf{1}}{^-\mathbf{3}} & \frac{1}{^-3}(^-3x) & > & \frac{1}{^-3}(^-27) \\
 & \frac{^-3}{-3}x & > & \frac{^-27}{-3} \\
 & 1x & > & 9
\end{array}
$$

Notice we reverse the relation symbol when we multiply an inequality by a negative number.

We can partially check this range of solutions by a sample substitution in the original inequality. 11 > 9, so we will try that sample.

$$
\begin{array}{rcl}
^-3(11) + 1 & < & -26 \\
-33 + 1 & < & -26 \\
-32 & < & -26 \quad \text{It checks.}
\end{array}
$$

The solution set is as follows:



Example 2 cont'd:

b. We want to make a "0" out of the -6 so we add $^+6$ (its opposite).

$$\frac{3n}{4} - 6 \geq 3$$

Add $^+6$ $\quad \frac{3n}{4} - 6 + (^+6) \geq 3 + (^+6)$

$$\frac{3n}{4} + 0 \geq 9$$

$$\frac{3n}{4} \geq 9$$

We want to make a "1" out of the $\frac{3}{4}$, so we multiply by $\frac{4}{3}$ (its reciprocal).

Mult. $\frac{4}{3}$ $\quad \frac{4}{3}\left(\frac{3n}{4}\right) \geq \frac{4}{3}(9)$

$$\frac{12}{12}n \geq \frac{36}{3}$$

$$1n \geq 12$$

Again we partially check this range of solutions by a sample substitution in the original inequality. $16 \geq 12$, so we will try that sample.

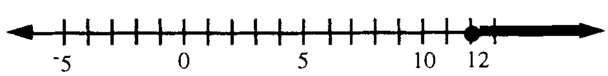
$$\frac{3(16)}{4} - 6 \geq 3$$

$$\frac{48}{4} - 6 \geq 3$$

$$12 - 6 \geq 3$$

$6 \geq 3$ It checks.

The solution set is as follows:



Lesson 4 – Exercises:

Find the solution set for each of the following open sentences by making the appropriate 0's and 1's.

1. $2n - 1 = 5$

2. $\frac{x}{2} - 6 = 14$

3. $\frac{r}{4} + 8 = 7$

4. $3t + 5 = 29$

5. $3t + 8 > 20$

6. $4x - 12 < 16$

7. $\frac{n}{8} + 16 > 15$

8. $\frac{7x}{9} - 3 \geq 4$

9. $5c + 7 < 18$

10. $2w + 7 \leq 1$

11. $^{-}6z - 7 \geq 11$

12. $5x + 4 \leq {}^{-}6$

13. $\frac{2}{3}x - 5 < 7$

14. $\frac{3}{4}y - 2 < {}^{-}8$

15. $4x + 13 \geq 5$

16. $2z - 1 > 7$

17. $^{-}5m - 10 < 25$

18. $9y + 4 > {}^{-}14$

19. $\frac{2m}{^{-}3} - 5 \geq 1$

p. 87 Lesson 4 − Combinations

1.
$$2n-1=5$$
$$2n-1+1=5+1$$
$$2n+0=6$$
$$\tfrac{1}{2}(2n)=\tfrac{1}{2}\cdot 6$$
$$\tfrac{2}{2}n=\tfrac{6}{2}$$
$$1\cdot n=3$$
$$n=3$$
$$S=\{3\}$$

2.
$$\tfrac{x}{2}-6=14$$
$$\tfrac{x}{2}-6+6=14+6$$
$$\tfrac{x}{2}+0=20$$
$$\tfrac{x}{2}=20$$
$$\tfrac{1}{2}\cdot x=20$$
$$\tfrac{2}{1}\cdot\tfrac{1}{2}\cdot x=\tfrac{2}{1}\cdot 20$$
$$\tfrac{2}{2}\cdot x=40$$
$$1\cdot x=40$$
$$x=40$$
$$S=\{40\}$$

3.
$$\tfrac{r}{4}+8=7$$
$$\tfrac{r}{4}+8+{}^{-}8=7+{}^{-}8$$
$$\tfrac{r}{4}+0={}^{-}1$$
$$\tfrac{r}{4}={}^{-}1$$
$$\tfrac{4}{1}\cdot\tfrac{1}{4}\cdot r=\tfrac{4}{1}\left({}^{-}1\right)$$
$$\tfrac{4}{4}\cdot r={}^{-}4$$
$$1\cdot r={}^{-}4$$
$$r={}^{-}4$$
$$S=\left\{{}^{-}4\right\}$$

4.
$$3t+5=29$$
$$3t+5+{}^{-}5=29+{}^{-}5$$
$$3t+0=24$$
$$3t=24$$
$$\tfrac{1}{3}\cdot 3t=\tfrac{1}{3}\cdot 24$$
$$\tfrac{3}{3}t=\tfrac{24}{3}$$
$$1\cdot t=8$$
$$t=8$$
$$S=\{8\}$$

5.
$$3t+8>20$$
$$3t+8+{}^{-}8>20+{}^{-}8$$
$$3t+0>12$$
$$3t>12$$
$$\tfrac{1}{3}(3t)>\tfrac{1}{3}\cdot 12$$
$$\tfrac{3}{3}\cdot t>\tfrac{12}{3}$$
$$1\cdot t>4$$
$$t>4$$
$$S=\left\{t \mid t>4\right\}$$

6.
$$4x-12<16$$
$$4x-12+12<16+12$$
$$4x+0<28$$
$$4x<28$$
$$\tfrac{1}{4}(4x)<\tfrac{1}{4}\cdot 28$$
$$\tfrac{4}{4}\cdot x<\tfrac{28}{4}$$
$$1\cdot x<7$$
$$x<7$$
$$S=\left\{x \mid x<7\right\}$$

7.
$$\tfrac{n}{8}+16>15$$
$$\tfrac{n}{8}+16+{}^{-}16>15+{}^{-}16$$
$$\tfrac{n}{8}+0>{}^{-}1$$
$$\tfrac{n}{8}>{}^{-}1$$
$$\tfrac{1}{8}\cdot n>{}^{-}1$$
$$\tfrac{8}{1}\cdot\tfrac{1}{8}\cdot n>\tfrac{8}{1}\cdot\left({}^{-}1\right)$$
$$\tfrac{8}{8}\cdot n>{}^{-}8$$
$$1\cdot n>{}^{-}8$$
$$n>{}^{-}8$$
$$S=\left\{n \mid n>{}^{-}8\right\}$$

8.
$$\tfrac{7x}{9}-3\ge 4$$
$$\tfrac{7x}{9}-3+3\ge 4+3$$
$$\tfrac{7x}{9}+0\ge 7$$
$$\tfrac{7x}{9}\ge 7$$
$$\tfrac{9}{7}\cdot\tfrac{7}{9}\cdot x\ge\tfrac{9}{7}\cdot 7$$
$$1\cdot x\ge 9$$
$$x\ge 9$$
$$S=\left\{x \mid x\ge 9\right\}$$

9.
$$5c+7<18$$
$$5c+7+{}^{-}7<18+{}^{-}7$$
$$5c+0<11$$
$$5c<11$$
$$\tfrac{1}{5}\cdot 5c<\tfrac{1}{5}\cdot 11$$
$$\tfrac{5}{5}\cdot c<\tfrac{11}{5}$$
$$1\cdot c<\tfrac{11}{5}$$
$$c<\tfrac{11}{5}$$
$$S=\left\{c \mid c<\tfrac{11}{5}\right\}$$

10.
$$2w+7\le 1$$
$$2w+7+{}^{-}7\le 1+{}^{-}7$$
$$2w+0\le{}^{-}6$$
$$2w\le{}^{-}6$$
$$\tfrac{1}{2}\cdot 2w\le\tfrac{1}{2}\left({}^{-}6\right)$$
$$\tfrac{2}{2}\cdot w\le\tfrac{-6}{2}$$
$$1w\le{}^{-}3$$
$$w\le{}^{-}3$$
$$S=\left\{w \mid w\le{}^{-}3\right\}$$

11.
$${}^{-}6z-7\ge 11$$
$${}^{-}6z-7+7\ge 11+7$$
$${}^{-}6z+0\ge 18$$
$${}^{-}6z\ge 18$$
$$\tfrac{1}{-6}\left({}^{-}6\right)\le\tfrac{1}{-6}(18)$$
$$\tfrac{-6}{-6}\cdot z\le\tfrac{18}{-6}$$
$$1\cdot z\le{}^{-}3$$
$$z\le{}^{-}3$$
$$S=\left\{z \mid z\le{}^{-}3\right\}$$

12.
$$5x+4\le{}^{-}6$$
$$5x+4+{}^{-}4\le{}^{-}6+{}^{-}4$$
$$5x+0\le{}^{-}10$$
$$5x\le{}^{-}10$$
$$\tfrac{1}{5}(5x)\le\tfrac{1}{5}\left({}^{-}10\right)$$
$$\tfrac{5}{5}x\le\tfrac{-10}{5}$$
$$1\cdot x\le{}^{-}2$$
$$x\le{}^{-}2$$
$$S=\left\{x \mid x\le{}^{-}2\right\}$$

13.
$$\tfrac{2}{3}x-5<7$$
$$\tfrac{2}{3}x-5+5<7+5$$
$$\tfrac{2}{3}x+0<12$$
$$\tfrac{2}{3}x<12$$
$$\tfrac{3}{2}\cdot\tfrac{2}{3}\cdot x<\tfrac{3}{2}\cdot 12$$
$$\tfrac{6}{6}\cdot x<\tfrac{36}{2}$$
$$1\cdot x<18$$
$$x<18$$
$$S=\left\{x \mid x<18\right\}$$

14.
$$\tfrac{3}{4}y-2<{}^{-}8$$
$$\tfrac{3}{4}y-2+2<{}^{-}8+2$$
$$\tfrac{3}{4}y+0<{}^{-}6$$
$$\tfrac{3}{4}y<{}^{-}6$$
$$\tfrac{4}{3}\cdot\tfrac{3}{4}y<\tfrac{4}{3}\left({}^{-}6\right)$$
$$\tfrac{12}{12}\cdot y<\tfrac{-24}{3}$$
$$1\cdot y<{}^{-}8$$
$$y<{}^{-}8$$
$$S=\left\{y \mid y<{}^{-}8\right\}$$

15.
$$4x+13\ge 5$$
$$4x+13+{}^{-}13\ge 5+{}^{-}13$$
$$4x+0\ge{}^{-}8$$
$$4x\ge{}^{-}8$$
$$\tfrac{1}{4}\cdot 4x\ge\tfrac{1}{4}\left({}^{-}8\right)$$
$$\tfrac{4}{4}\cdot x\ge\tfrac{-8}{4}$$
$$1\cdot x\ge{}^{-}2$$
$$x\ge{}^{-}2$$
$$S=\left\{x \mid x\ge{}^{-}2\right\}$$

16.
$$2z-1>7$$
$$2z-1+1>7+1$$
$$2z+0>8$$
$$2z>8$$
$$\tfrac{1}{2}\cdot(2z)>\tfrac{1}{2}\cdot 8$$
$$\tfrac{2}{2}\cdot z>\tfrac{8}{2}$$
$$1\cdot z>4$$
$$z>4$$
$$S=\left\{z \mid z>4\right\}$$

17.

$$^-5m - 10 < 25$$
$$^-5m - 10 + 10 < 25 + 10$$
$$^-5m + 0 < 35$$
$$^-5m < 35$$
$$\tfrac{1}{-5}\left(^-5\right) > \tfrac{1}{-5}(35)$$
$$\tfrac{-5}{-5}\cdot m > \tfrac{35}{-5}$$
$$1\cdot m > {}^-7$$
$$m > {}^-7$$

$$S = \left\{m \mid m > {}^-7\right\}$$

18.

$$9y + 4 > {}^-14$$
$$9y + 4 + {}^-4 > {}^-14 + {}^-4$$
$$9y + 0 > {}^-18$$
$$9y > {}^-18$$
$$\tfrac{1}{9}(9y) > \tfrac{1}{9}\left(^-18\right)$$
$$\tfrac{9}{9}\cdot y > \tfrac{-18}{9}$$
$$1\cdot y > {}^-2$$
$$y > {}^-2$$

$$S = \left\{y \mid y > {}^-2\right\}$$

19.

$$\tfrac{2m}{-3} - 5 \ge 1$$
$$\tfrac{2m}{-3} - 5 + 5 \ge 1 + 5$$
$$\tfrac{2m}{-3} + 0 \ge 6$$
$$\tfrac{2m}{-3} \ge 6$$
$$\tfrac{2}{-3}\cdot m \ge 6$$
$$\tfrac{-3}{2}\cdot\tfrac{2}{-3}\cdot m \le \tfrac{-3}{2}\cdot 6$$
$$\tfrac{-6}{-6}\cdot m \le \tfrac{-18}{2}$$
$$1\cdot m \le {}^-9$$
$$m \le {}^-9$$

$$S = \left\{m \mid m \le {}^-9\right\}$$

Quiz Form A

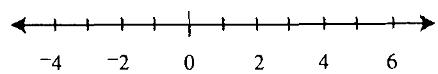
Name ____

Class _________ **Date** ___________ **Score** ______

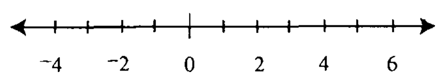
Unit II – First Degree Relations with One Placeholder
Part A – Basic Equations and Inequalities
Lesson 1 – Solution Statements and Solution Sets
Lesson 2 – First Type – Making Zeros
Lesson 3 – Second Type – Making Ones
Lesson 4 – Combinations

For each of the following solution statements, give the solution set, using the proper set notation – roster or rule, and using a number line.

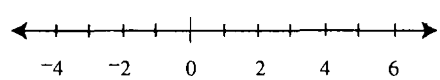
1. $w = {}^{-}3$ $S = \{ \qquad\qquad \}$



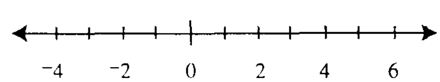
2. $x = 2$ $S = \{ \qquad\qquad \}$



3. $a > 1$ $S = \{ \qquad\qquad \}$



4. $m \leq {}^{-}2$ $S = \{ \qquad\qquad \}$



Name ________________________________

Unit II, Part A, Lessons 1, 2, 3 and 4, Quiz Form A
− Continued −

Find the solution(s) for each of the following open sentences. Express your answer using set notation.

5. $x + 7 = 15$

6. $c - 7 = 12$

7. $w - 4 > {}^{-}7$

8. $4x = 12$

9. ${}^{-}3n = {}^{-}15$

10. $3n < 30$

11. ${}^{-}4y \geq 12$

12. $3x - 1 = 17$

13. $\frac{4}{3}m + 1 < 25$

Quiz Form B

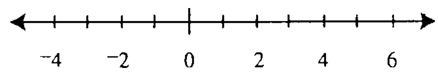
Name ______________________________________

Class _________ **Date** __________ **Score** ______

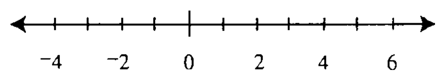
Unit II – First Degree Relations with One Placeholder
Part A – Basic Equations and Inequalities
Lesson 1 – Solution Statements and Solution Sets
Lesson 2 – First Type – Making Zeros
Lesson 3 – Second Type – Making Ones
Lesson 4 – Combinations

For each of the following solution statements, give the solution set, using the proper set notation – roster or rule, and using a number line.

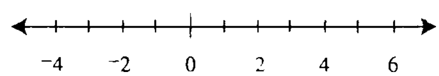
1. $y \geq {}^{-}4$ $\quad S = \{ \qquad\qquad \}$



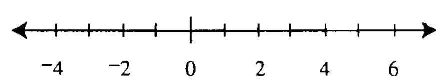
2. $b < 0$ $\quad S = \{ \qquad\qquad \}$



3. $x = 3$ $\quad S = \{ \qquad\qquad \}$



4. $a = {}^{-}1$ $\quad S = \{ \qquad\qquad \}$



Name ______________________________

Unit II, Part A, Lessons 1, 2, 3 and 4, Quiz Form B
– Continued –

Find the solution(s) for each of the following open sentences. Express your answer using set notation.

5. $5a = 30$

6. $x + 9 = 15$

7. $^{-}3m < 15$

8. $m - 9 = 30$

9. $^{-}4y = {}^{-}28$

10. $5x + 2 = 32$

11. $f - 5 < {}^{-}8$

12. $5x > 60$

13. $\frac{5}{2}n + 1 \geq 26$

Quiz Form A

Name ______________________________

Class ________ **Date** __________ **Score** ______

Unit II – First Degree Relations with One Placeholder
Part A – Basic Equations and Inequalities
Lesson 1 – Solution Statements and Solution Sets
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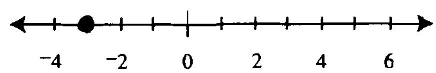
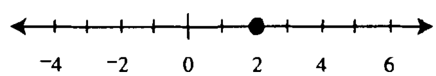
Lesson 3 – Second Type – Making Ones
Lesson 4 – Combinations

For each of the following solution statements, give the solution set, using the proper set notation – roster or rule, and using a number line.

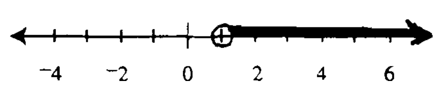
1. $w = {}^{-}3$ $S = \{\ {}^{-}3\ \}$



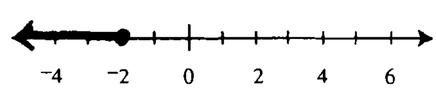
2. $x = 2$ $S = \{\ 2\ \}$



3. $a > 1$ $S = \{\ a \mid a > 1\ \}$



4. $m \le {}^{-}2$ $S = \{m \mid m \le {}^{-}2\}$



Name ___________________________________

Unit II, Part A, Lessons 1, 2, 3 and 4, Quiz Form A
– Continued –

Find the solution(s) for each of the following open sentences. Express your answer using set notation.

5. $x+7=15$

$x+7+^-7 = 15+^-7$

$x+0 = 8$

$x = 8$

$S = \{8\}$

6. $c-7=12$

$c-7+7 = 12+7$

$c+0 = 19$

$c = 19$

$S = \{19\}$

7. $w-4>{}^-7$

$w-4+4 > {}^-7+4$

$w+0 > {}^-3$

$w > {}^-3$

$S = \{w \mid w > {}^-3\}$

8. $4x=12$

$\frac{1}{4}(4x) = \frac{1}{4}(12)$

$\frac{4}{4}x = \frac{12}{4}$

$1x = 3$

$x = 3$

$S = \{3\}$

9. ${}^-3n={}^-15$

$\frac{1}{-3}({}^-3n) = \frac{1}{-3}({}^-15)$

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

$1n = 5$

$n = 5$

$S = \{5\}$

10. $3n<30$

$\frac{1}{3}(3n) < \frac{1}{3}(30)$

$\frac{3}{3}n < \frac{30}{3}$

$1n < 10$

$n < 10$

$S = \{n \mid n < 10\}$

11. ${}^-4y \geq 12$

$\frac{1}{-4}({}^-4y) \leq \frac{1}{-4}(12)$

$\frac{-4}{-4}y \leq \frac{12}{-4}$

$1y \leq {}^-3$

$y \leq {}^-3$

$S = \{y \mid y \leq {}^-3\}$

12. $3x-1=17$

$3x-1+1 = 17+1$

$3x+0 = 18$

$3x = 18$

$\frac{1}{3}(3x) = \frac{1}{3}(18)$

$\frac{3}{3}x = \frac{18}{3}$

$1x = 6$

$x = 6$

$S = \{6\}$

13. $\frac{4}{3}m+1<25$

$\frac{4}{3}m+1+^-1 < 25+^-1$

$\frac{4}{3}m+0 < 24$

$\frac{4}{3}m < 24$

$\frac{3}{4}(\frac{4}{3}m) < \frac{3}{4}(24)$

$\frac{12}{12}m < \frac{72}{4}$

$1m < 18$

$m < 18$

$S = \{m \mid m < 18\}$

Quiz Form B

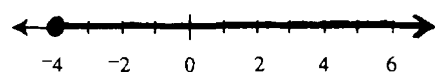
Name ______________________________

Class __________ **Date** ___________ **Score** ______

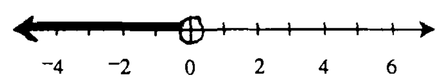
Unit II – First Degree Relations with One Placeholder
Part A – Basic Equations and Inequalities
Lesson 1 – Solution Statements and Solution Sets
Lesson 2 – First Type – Making Zeros
Lesson 3 – Second Type – Making Ones
Lesson 4 – Combinations

For each of the following solution statements, give the solution set, using the proper set notation – roster or rule, and using a number line.

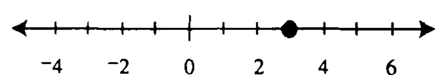
1. $y \geq {}^-4$ $S = \{\, y \mid y \geq {}^-4 \,\}$



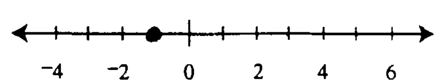
2. $b < 0$ $S = \{\, b \mid b < 0 \,\}$



3. $x = 3$ $S = \{\ 3\ \}$



4. $a = {}^-1$ $S = \{\ {}^-1\ \}$



Name ______________________________

Unit II, Part A, Lessons 1, 2, 3 and 4, Quiz Form B
– Continued –

Find the **solution**(s) for each of the following open sentences. Express your answer using set notation.

5. $5a = 30$

$\frac{1}{5}(5a) = \frac{1}{5}(30)$

$\frac{5}{5}a = \frac{30}{5}$

$1a = 6$

$a = 6$

$S = \{6\}$

6. $x + 9 = 15$

$x + 9 + {}^-9 = 15 + {}^-9$

$x + 0 = 6$

$x = 6$

$S = \{6\}$

7. ${}^-3m < 15$

$\frac{1}{-3}({}^-3m) > \frac{1}{-3}(15)$

$\frac{-3}{-3}m > \frac{15}{-3}$

$1m > {}^-5$

$m > {}^-5$

$S = \{m \mid m > {}^-5\}$

8. $m - 9 = 30$

$m - 9 + 9 = 30 + 9$

$m + 0 = 39$

$m = 39$

$S = \{39\}$

9. ${}^-4y = {}^-28$

$\frac{1}{-4}({}^-4y) = \frac{1}{-4}({}^-28)$

$\frac{-4}{-4}y = \frac{-28}{-4}$

$1y = 7$

$y = 7$

$S = \{7\}$

10. $5x + 2 = 32$

$5x + 2 + {}^-2 = 32 + {}^-2$

$5x + 0 = 30$

$5x = 30$

$\frac{1}{5}(5x) = \frac{1}{5}(30)$

$\frac{5}{5}x = \frac{30}{5}$

$1x = 6$

$x = 6$

$S = \{6\}$

11. $f - 5 < {}^-8$

$f - 5 + 5 < {}^-8 + 5$

$f + 0 < {}^-3$

$f < {}^-3$

$S = \{f \mid f < {}^-3\}$

12. $5x > 60$

$\frac{1}{5}(5x) > \frac{1}{5}(60)$

$\frac{5}{5}x > \frac{60}{5}$

$1x > 12$

$x > 12$

$S = \{x \mid x > 12\}$

13. $\frac{5}{2}n + 1 \geq 26$

$\frac{5}{2}n + 1 + {}^-1 \geq 26 + {}^-1$

$\frac{5}{2}n + 0 \geq 25$

$\frac{5}{2}n \geq 25$

$\frac{2}{5}(\frac{5}{2}n) \geq \frac{2}{5}(25)$

$\frac{10}{10}n \geq \frac{50}{5}$

$1n \geq 10$

$n \geq 10$

$S = \{n \mid n \geq 10\}$