

Algebra 1 - Semester 1 - Final Review ANSWERS

(1) (A) y -intercept: -3
 slope: $\frac{1}{4}$
 equation: $y = \frac{1}{4}x - 3$

(B) y -intercept: 2
 slope: -3
 equation: $y = -3x + 2$

(C) y -intercept: 0
 slope: -1
 equation: $y = -x$

(D) y -intercept: -3
 slope: 0
 equation: $y = -3$

(E) y -intercept: *none*
 slope: *undefined*
 equation: $x = 4$

(F) y -intercept: *none*
 slope: *undefined*
 equation: $x = -2$

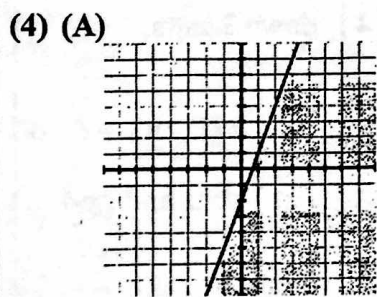
(2) (A) $x = -13$ or $x = -3$

(B) $x = -10$ or $x = 18$

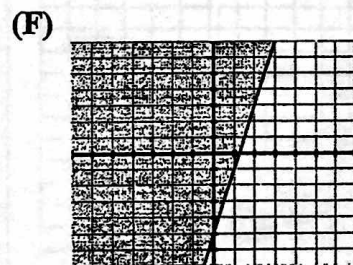
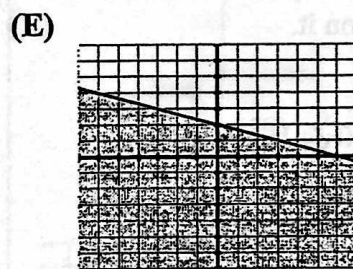
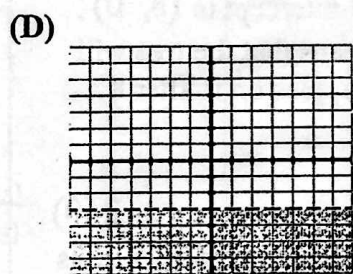
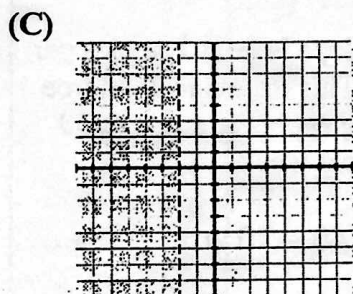
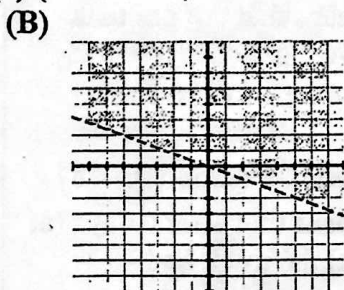
(C) $x = -4$ or $x = 8$

(D) $x = \frac{-19}{5}$ or $x = 3$

- (3) (A) 20 books
 (B) \$340



(4) (continued)



(5) (A) $y > -\frac{1}{3}x + 2$

(B) $y \geq 4x - 1$

(C) $y \leq \frac{1}{2}x$

(6) (A) $x = -2$

(B) $y = -1$

(C) $y = \frac{3}{2}$

(D) $x = -5$

(E) $y = -25$

(F) $x = 3$

(7) (A) $P = \frac{L}{\pi n^2}$

(B) $p = L - \pi n^2$

(C) $p = L - \pi - n^2$

(D) $p = 12n - 4$

(E) $p = \pi n^2 L$

(F) $p = 8L - 10$

(8) (A) $y = \frac{2}{3}x - 3$

(B) $y = -\frac{1}{4}x - \frac{3}{4}$

(C) $y = -2x - 1$

(9) (A) $x = \frac{2}{3}$

(B) *no solutions*

(C) $x = 21$

(D) *Infinitely many solutions*

(10) (A) $x \geq -9$

(B) $x \geq 180$

(C) $x > 36$

(11) (A) $x \leq 9$

(B) $x \leq 70$

(12) (A) $y = -\frac{1}{5}x + \frac{23}{5}$

(B) $y = 2x - 4$

(13) (A) $y = -4.5x + 54$

(B) 54 pounds

(C) The slope is -4.5 pounds of fertilizer per week. This means that you put 4.5 pounds of fertilizer on your lawn each week.

(D) 12 weeks

(14) (A) $y = -3x + 120$

(B) 120 cups

(C) The slope is -3 cups of seed per day. This means that you put 3 pounds of seed in the birdfeeder each day.

(D) 40 days

(15) (A) $-\frac{5}{3}$

(B) $\frac{4}{3}$

(C) $-\frac{1}{4}$

(D) 5

(16) Answer choice C

(17) Answer choice B

(18) Answer choice C

(19) Answer choice B

(20) Answer choice D

(21) Answer choice C

(22) Answer choice A

(23) Answer choice B

(24) The slope is -4 gallons per day. This means that the truck is using fuel at a rate of 4 gallons per day.

(25) $T = 48 - 4d$

(26) The x -intercept is $(12, 0)$.

This means that the gas tank will have 0 gallons (it will be empty) after 12 days.

(27) The y -intercept is $(0, 48)$.

This means that after 0 days (at the start) the truck had 48 gallons of gas in the tank.

(28) The slope is -30 apples per week. This means that the tree is losing apples at a rate of 30 apples per week.

(29) $A = 240 - 30w$

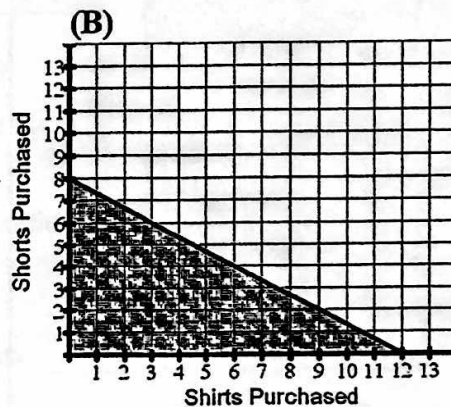
(30) The x -intercept is $(8, 0)$.

This means that the tree will have 0 apples on it after 8 weeks.

(31) The y -intercept is $(0, 240)$.

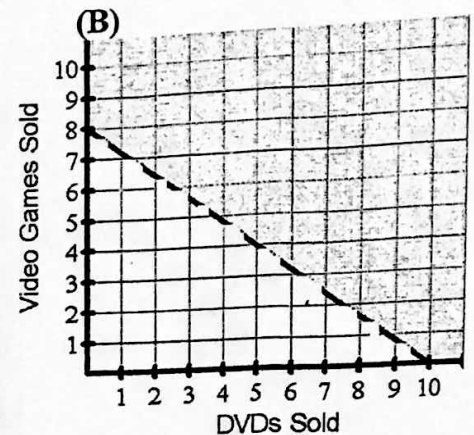
This means that after 0 weeks (at the start) the tree had 240 apples on it.

(32) (A) $10x + 15y \leq 120$



(C) (I) Yes
(II) No
(III) Yes

(33) (A) $20x + 25y > 200$



(C) (I) No
(II) Yes
(III) No

(34) Translate the graph of $y = x^2$ left 5 units.

(35) Translate the graph of $y = x^2$ up 5 units.

(36) Translate the graph of $y = x^2$ right 4 units and down 6 units.

(37) Translate the graph of $y = |x|$ right 3 units.

(38) Translate the graph of $y = |x|$ down 3 units.

(39) Translate the graph of $y = |x|$ left 1 unit and up 4 units.

(40) (A) Domain: All real numbers

Range: $y \geq -4$

(B) Domain: $x \leq 2$

Range: All real numbers

(C) Domain: All real numbers

Range: $y \geq -2$

(D) Domain: All real numbers

Range: $y \geq -3$

(E) Domain: $x \leq 0$

Range: All real numbers

(F) Domain: All real numbers

Range: All real numbers

- (41) (A) Linear (B) Exponential
(C) Neither (D) Exponential
(E) Neither (F) Linear
(G) Linear (H) Exponential
(I) Neither

(42) -1

(43) -32

(44) -18

(45) 3

(46) -32

(47) 2

(48) $5 + (n-1)4$

(49) $3 + (n-1)7$

(50) $20 + (n-1)(-3)$

(51) $n = 6$

(52) $n = 8$

(53) $n = 4$

(54) $n = 11$

(55) $n = 3$

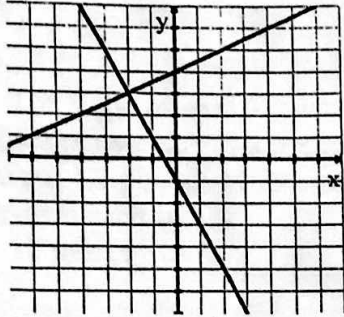
(56) $n = 8$

$$(57) y = \begin{cases} x+4 & \text{if } x \leq -2 \\ -\frac{1}{2}x-2 & \text{if } x > -2 \end{cases}$$

$$(58) y = \begin{cases} -x-2 & \text{if } x \leq 3 \\ -\frac{1}{3}x+4 & \text{if } x > 3 \end{cases}$$

$$(59) y = \begin{cases} -2x+1 & \text{if } x < 2 \\ \frac{1}{2}x+3 & \text{if } x \geq 2 \end{cases}$$

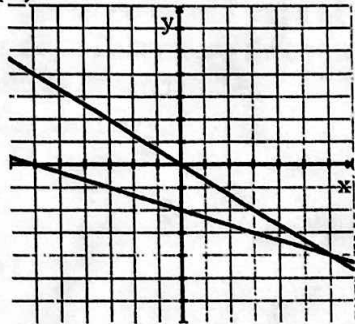
(60) (A)



Solution:

$(-2, 3)$

(B)



Solution:

$(6, -4)$

(61) (A) **Easiest Method:** Elimination

Solution: $(1, 2)$

(B) **Easiest Method:** Substitution

Solution: $(2, -2)$

(C) **Easiest Method:** Substitution

Solution: $(3, 0)$

(D) **Easiest Method:** Elimination

Solution: $(2, -1)$

(E) **Easiest Method:** Elimination

Solution: None

(F) **Easiest Method:** Elimination

Solution: $(0, -5)$

(62) (A) 32 nickels and 47 dimes

(B) 20 small boxes and 7 large boxes

(C) Not possible.

(D) One bag of peanuts costs \$2

(63) (A) \$5931.84

(B) \$12072.31

(C) \$417.34

(D) 1093 people

(64) (A) $\frac{64x^{18}}{y^{15}}$

(B) $\frac{16n^{20}}{m^{12}}$

(C) $\frac{-27a^3}{n^6}$

(D) $\frac{y^{12}}{x^6}$

(E) $\frac{x^{17}}{16y^{10}}$

(65) $(\sqrt[3]{p})^{12}$, $p^{\frac{12}{3}}$, p^4

(66) $(\sqrt[4]{p})^8$, $p^{\frac{8}{4}}$, p^2

(67) $(\sqrt{p})^{10}$, $p^{\frac{10}{2}}$, p^5

(68) $(\sqrt[5]{p})^{15}$, $p^{\frac{15}{5}}$, p^3

(69) 81, 243, 729

(70) 3, 1, $\frac{1}{3}$

(71) 6, 3, $\frac{3}{2}$

(72) 20, 16, 12, 8

(73) 2, -8, 32, -128

(74) 6, 4, 2, 0

(75) 4, -20, 100, -500