

Part 1. ① A) is a reflection.

② 20% of 50 (choice B)

method 1

10% of 50 is 5.
(cut off a zero).

Therefore 20% is 10.

method 2

$$(50)(.20) = 10$$

method 3

$$\frac{20}{100} = \frac{x}{50} \quad \frac{100x}{100} = \frac{1000}{100}$$

$$x = 10$$

③ $12xy - 15x + bxy$
combine like terms

$$18xy - 15x$$

choice C)

④ choice B). $\angle R$ and $\angle S$ are congruent (\cong) because they are vertical angles.

⑤ $\frac{x+3}{2} = 8$, x must be 13. choice C)

⑥ Pythagorean Theorem

$$a^2 + b^2 = c^2$$

$$9^2 + 12^2 = c^2$$

$$144 + 81 = c^2 \quad 15 = c$$

$$\sqrt{225} = \sqrt{c^2} \quad \text{(choice C)}$$

Also Pythagorean ~~theorem~~
Triple 3-4-5

Note: Choice A & B are too small, hypotenuse must be largest side.

⑦ $\frac{1}{4} = 12$ miles, what is $3\frac{1}{4}$?
choice D)

1 inch will be $\frac{4}{4}$ or 48 miles. So, $(3 \times 48) + 12$
would be 156. Also could use $\frac{13}{4}$ (improper fraction)

⑧ 80,000; you need 4%.

1% would be 800 (two zeros removed).

4% is 4 times 800, or 3200. choice B

could also use:

$$(80,000)(.04) \quad \text{or} \quad \frac{4}{100} = \frac{x}{80,000}$$

⑨ $\angle 1$ and $\angle 8$ are congruent (\cong). They are alternate ~~interior~~ angles. choice B)

⑩ $(6a^2b^3c^4)(3a^3b^4c) = 18a^5b^7c^5$ - choice C.

Observe laws of Exponents. Multiply coefficients!

⑪ $(3+3)^2 + 2^3 = 6^2 + 2^3 = 36 + 8 = 44$ choice D

⑫ $(3x^3 + 2x^2 - 5x) + (-8x^3 + 3x)$
 $-5x^3 + 2x^2 - 2x$ } combine like terms. parentheses are meaningless due to the addition operation.

⑬ Increasing Over Time. choice B)

⑭ $m \geq 85.00$, choice C. 85 is the lowest value that works!

Part 2. (28) 30° is supplementary to $\angle 2$, therefore $\angle 2$ is 150° .

$\angle 1$ is an Alternate Interior Angle to $\angle 2$. They are congruent. $\angle 1 = 150^\circ$

(29) Part A - Translation | Part B - Must be translation because corresponding vertices are (means shift or move) still in the same position, negating possibility of reflection.

$K \rightarrow K', L \rightarrow L', J \rightarrow J', M \rightarrow M'$. Clearly demonstrates sliding, gliding, or shifting.

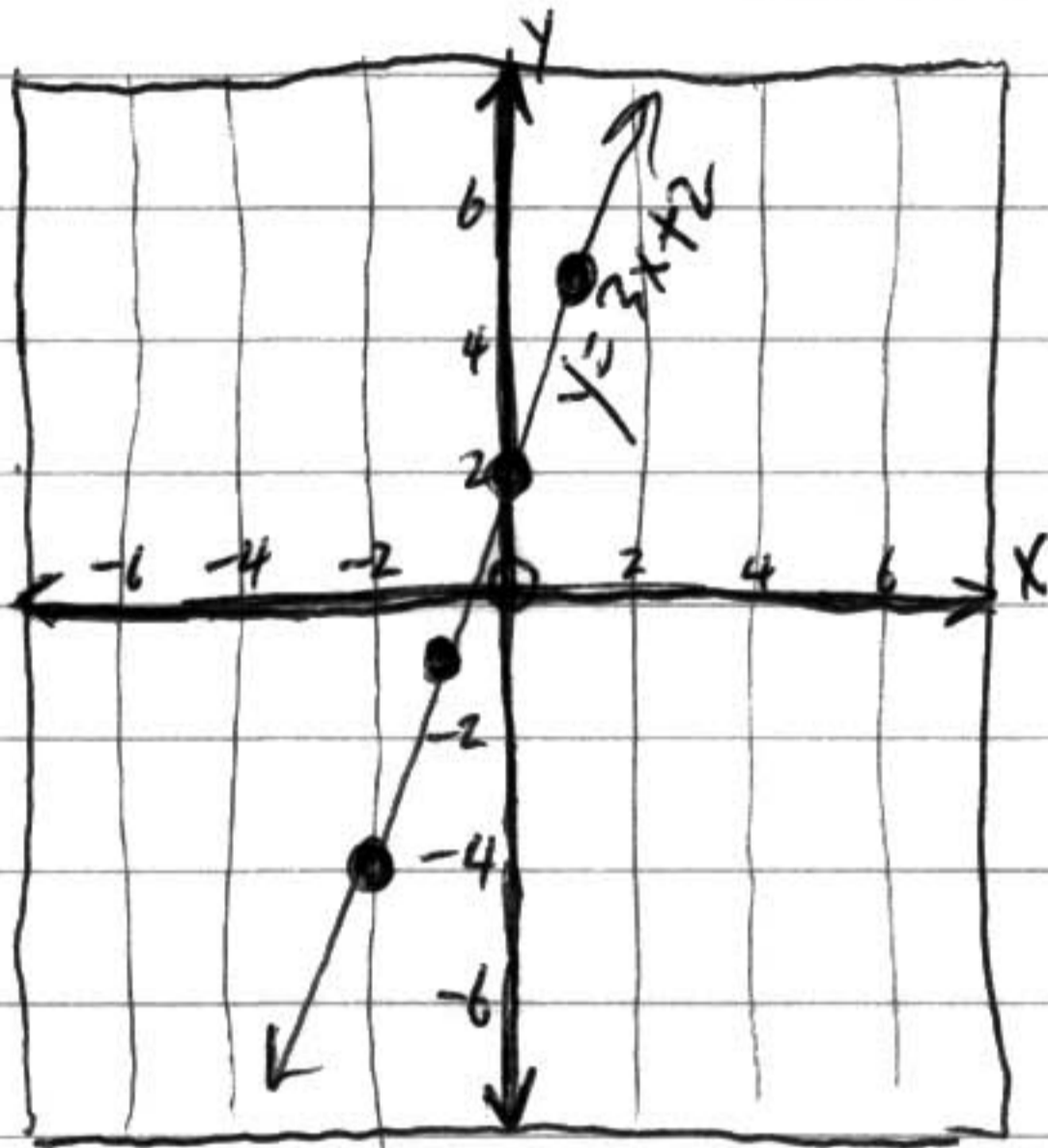
(30) Perimeter: $x + 2x + 5 + 3x - 2 + 3x = 84$ $9x = 81$ $x = 9$ | $\overline{BC} = 3x - 2$ $\overline{BC} = 25$
 $9x + 3 = 84$ $\frac{9x}{9} = \frac{81}{9}$ $x = 9$ | $= 3(9) - 2$
 $= 27 - 2$

(31) $(1.50)(.20) = .30 \leftarrow$ increase | method 2: 10% of 1.50 is .15 (slide decimal)
 $.30 + 1.50 = 1.80 \leftarrow$ new price | So, 20% is double. $.30 + 1.50 = 1.80 \leftarrow$ new price

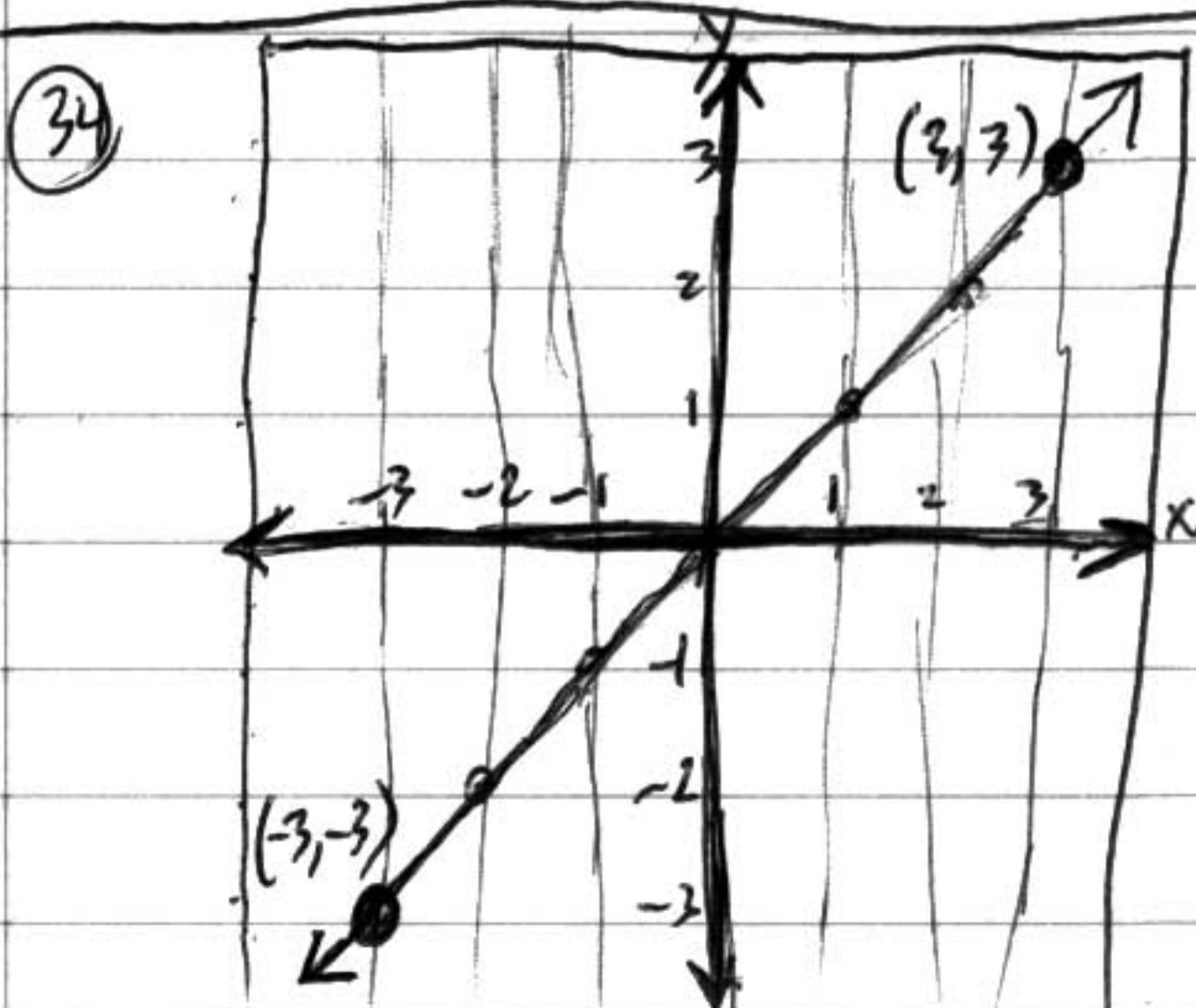
(32)

x	y
-2	-4
-1	-1
0	2
1	5

$y - 3x = 2$
change it!
 $y = 3x + 2$

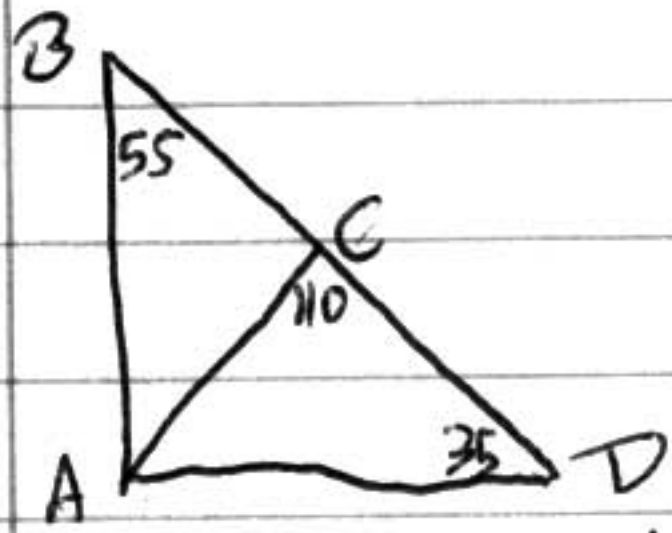


(33) $48 \geq 4 + 11x$ or $48 \geq 11x + 4$



(35) Toasty Oats $\frac{\$2.25}{15} = 0.15$ per oz. | Crunchy Oatles $\frac{\$3.90}{30} = 0.13$ per oz.
 Part A \nearrow Part B \nearrow
 more Part B ~~Crunchy~~ Toasty 0.15
 Crunchy 0.13
 Difference 0.02
 2¢ more

- 15) Do Not Assume $\angle BAD$ is a right angle. (It later does prove to be a right angle anyway)



$\angle BCA$ is 70, supplementary to $\angle ACD$ (add to 180)
 $\angle CAD$ is 35, Triangle Sum (with 110 and 35)
 $\angle BAC$ is 55, Triangle Sum (with 55 and 70)
 $\angle BAC$ & $\angle CAD$ are complementary (add to 90)

- 16) $\angle 1$ and $\angle 2$ | All the other angle pairs are congruent!
 choice B)

17) $\frac{24x^6y^{12}z^{18}}{6x^3y^6z^9} = 4x^3y^6z^9$ because $\frac{24}{6} = 4$, $\frac{x^6}{x^3} = x^3$, $\frac{y^{12}}{y^6} = y^6$, $\frac{z^{18}}{z^9} = z^9$
 (choice D)

- 18) choice B). Must fit $a^2 + b^2 = c^2$ and 10 is the hypotenuse.

19) 20 oz. of popcorn is \$2.80 $\frac{280}{20} = .14$ per ounce! $(.14)(35) = 4.90$ choice D

20) $(2x-5)(2x-3) = 4x^2 - 6x - 10x + 15 = 4x^2 - 16x + 15$ FOIL (choice D)

21) Function Rule for table is $y = x + 6$. choice C)

22) 30 five-foot ~~pieces~~ pieces equals 150 ft of rope. 3 ft. per yard.
 $150/3 = 50$ yards choice C.

23) $(3a^2 + 5a - 11) - (11a^2 + 2a - 12) = -8a^2 + 3a + 1$. Be careful about the minus sign! choice A

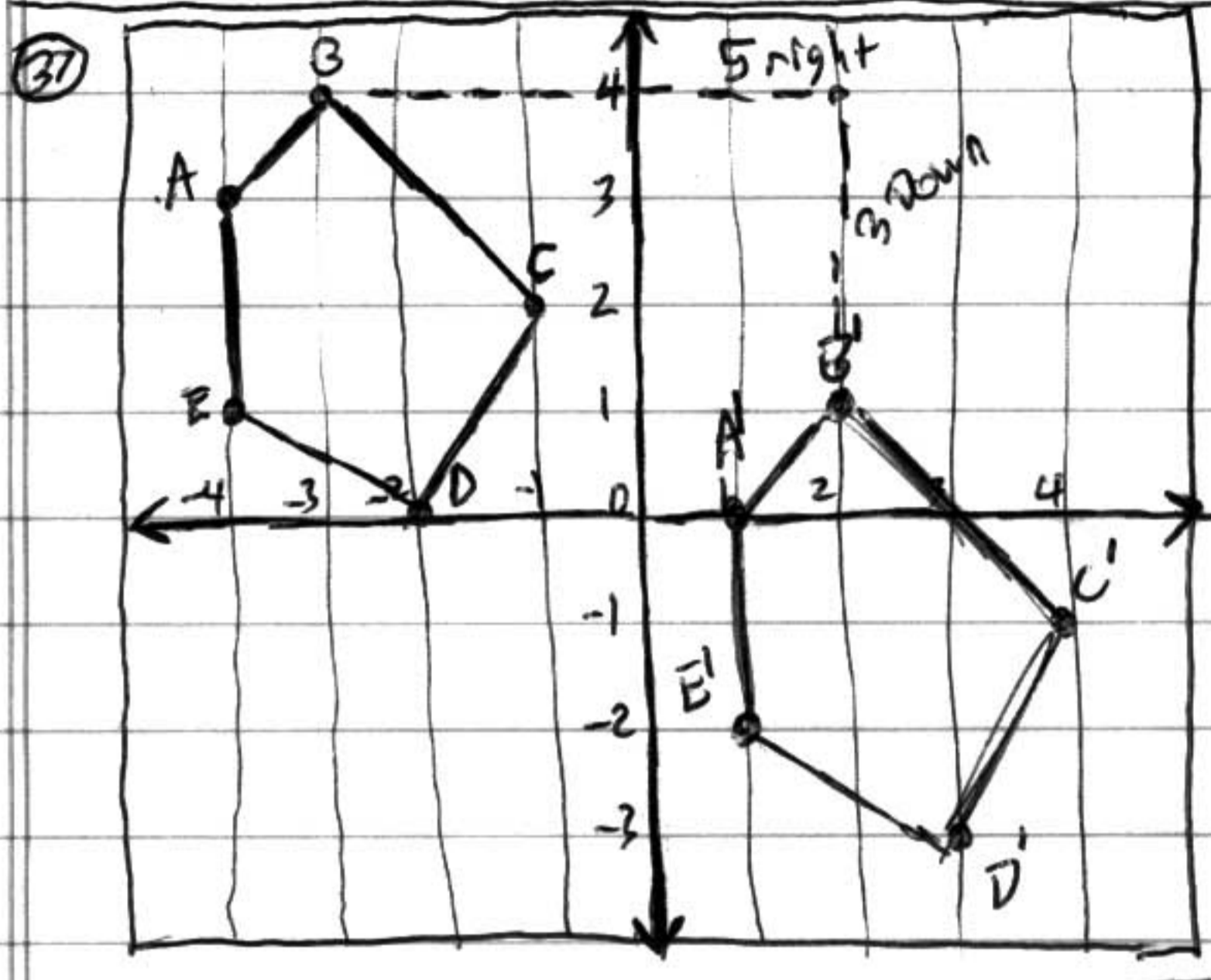
24) $(a-3b)(2a+2b) = 2a^2 + 2ab - 6ab - 6b^2 = 2a^2 - 4ab - 6b^2$ FOIL choice A.

25) Complementary means add to 90. $(2x+10) + (x+20) = 90$ $\frac{3x}{3} = \frac{60}{3}$ $x = 20$ $\angle G = 2(20) + 10$
 $3x + 30 = 90$ $\angle G = 50$ choice D

26) $\frac{3}{4}$ ORIGINAL PRICE, therefore you need to apply the $\frac{3}{4}$ to p first. $\frac{3}{4}p - 40$. No parentheses! choice D

- 27) Measurement. Use ruler to measure from Niagara to Buffalo and then Buffalo to East Aurora, then add the two measurements.

36) Angles are Supplementary! / $(2x+40) + (x+12s) = 180$ $\frac{3x}{3} = \frac{15}{3}$ $\angle A = 2x+40$ $\angle A = 50^\circ$
 Add to 180° $3x+16s = 180$ $x = 5$ $= 2(s)+40$
 $= 10+40$



38)

x	y
32	4
48	6
64	8
96	12

 Equation: $y = \frac{x}{8}$

240 students?
 $y = \frac{240}{8}$
 $y = 30$

39) Corresponding Angles (\cong)
 $4w+40 = w+115$ $\angle ABC = 4w+40$
 $\frac{3w}{3} = \frac{75}{3}$ $\angle ACB = 4(25)+40$
 $w = 25$ $\angle ACB = 100+40$
 $\angle ACB = 140^\circ \leftarrow \text{Ans}$

40) $b = 14w - 4$ Table changes by 14 each week, Must adjust for week 1.
 or $b = 14(w-1) + 10$ week 1.
 Week 8. $b = 14(8) - 4$
 $= 112 - 4$
 $= 108 \leftarrow \text{Answer}$

42) $a^2 + b^2 = c^2$ $\sqrt{x^2} = \sqrt{225}$
 $x^2 + 8^2 = 17^2$ $x = 15$
 $x^2 + 64 = 289$
 $-64 \quad -64$
 $x^2 = 225$

43) Vertical Angles are congruent.
 $x+15 = 2x$ $\angle ABC = 2x$
 $-x \quad -x$ $= 2(15)$
 $15 = x$ $= 30^\circ$

41) Earns: 160
 Expenses: $12+75 = 87$
 Deposits: $160-87 = 73$

$\frac{78}{160} = \frac{x}{100}$
 $\frac{160x}{160} = \frac{7800}{160}$
 $x = 48.75$

Estimate is incorrect.
 It is closer to 50%. (48.75%)

42) $\frac{x}{160} = \frac{40}{100}$ $\frac{100x}{100} = \frac{6400}{100}$
 $x = 64$
 He needs to deposit \$64.

44) Reflection over y-axis. Change x-values
 $M(-8, -9) \rightarrow M'(8, -9)$ $O(-2, -3) \rightarrow O'(2, -3)$
 $N(-9, -3) \rightarrow N'(9, -3)$ $P(-4, -9) \rightarrow P'(4, -9)$

45) $0.75s + 5 = 0.50s + 9$
 $-0.50 \quad -5 \quad -0.50 \quad -5$
 $0.25s = 4$
 $\frac{0.25s}{0.25} = \frac{4}{0.25}$
 $s = 16 \text{ songs}$