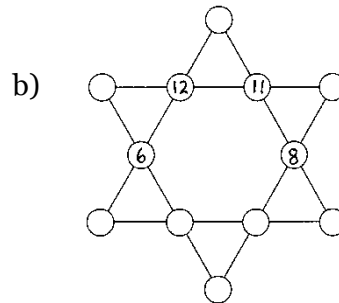
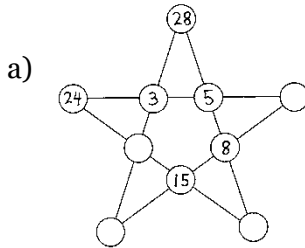


9th Grade Assignment – Week #14

Group Assignment: Puzzles!

1. Help each other out with some of the more difficult problems from **Factoring** Problem Sets #9 and #10.
2. **Four People Crossing a Bridge.** Abe, Bob, Kate and Mary come to a bridge in the middle of the night. At most, two people can cross at the same time, but they must cross at the rate of the slower person. Individually, Abe takes two minutes to cross, Bob takes ten minutes to cross, Kate takes one minute, and Mary takes five minutes. There is only one flashlight, and it must be used for all crossings. What is the least amount of time necessary for all four people to make it across the bridge? (Hint: It can be done in less than 19 minutes!)
3. **Pentagram and Hexagram.** With each figure below, fill in the circles so that each row of four circles has the same sum.



Individual Work

- Pick and choose which problems you need to work on from **Factoring** Problem Sets #9 and #10.

Problem Set #9

Section A

Factor.

- 1) $x^2 - x - 20$
- 2) $x^2 + 6x - 36$
- 3) $18x^2 + 31x + 6$
- 4) $14x^2 + 13x - 12$
- 5) $x^2 - 225$
- 6) $x^2 + 225$
- 7) $x^2 + 9x - 20$
- 8) $5x^5 + 20x^3$

Multiply.

- 9) $(x^3 - 6)(x^3 + 6)$
- 10) $(x^3 + 6)^2$
- 11) $(x - 40)^2$

Solve.

- 12) $x^2 - 7x - 30 = 0$
- 13) $x^2 + 25 = 10x$
- 14) $7 + 2x = 8x + x^2$
- 15) $x^2 + 5x = 6$
- 16) $x^2 + 5x + 6 = 0$
- 17) $x^2 + 5x + 6 = 2$
- 18) $x^2 + 5x + 6 = -2x$
- 19) $x^2 + 5x + 6 = 2x^2$
- 20) $x^2 - 54 = 25x$
- 21) $2x^2 - 108 = 50x$
- 22) $4(3x - 2) = 12x - 8$

Section B

Multiply.

- 23) $4x^3(x + 3)(x - 3)$
- 24) $(3x - 4y^3)^2$
- 25) $(x^{10} + 100)(x^5 + 10)(x^5 - 10)$

Factor.

- 26) $x^9 - x$
- 27) $12x^3y^5 - 4x^2y^3$
- 28) $10x^3 + 10x^2 - 200x$
- 29) $8x^2y^5 + 24x^5y^2$
- 30) $8x^2y^5 + 24x^2y^5$
- 31) $x^{12} - 625$
- 32) $18x^2 + 12x - 6$
- 33) $18x^2 - 21xy + 6y^2$
- 34) $18x^6 - 107x^3 - 6$

Solve.

- 35) $13 - (x + 3)^2 = 12$
- 36) $5x^2 - 8x + 3 = x^2 + 12x - 21$
- 37) $7x^2 + 3 = x^2 + 19x - 12$
- 38) $x^2 - 56 = (x + 2)(x - 8)$
- 39) $2x^2 - 56 = (x + 2)(x - 8)$

Problem Set #10

Section A

Factor.

- 1) $x^2 - 27x + 50$
- 2) $x^2 + 17x - 60$
- 3) $x^6 - 100$
- 4) $x^8 - 10,000$

Solve.

- 5) $x^2 + 4x + 4 = 0$
- 6) $x^2 + 4 = -4x$
- 7) $x^2 = 4x + 45$
- 8) $7x = x^2 + 10$
- 9) $x^2 = 13x - 12$
- 10) $14 - 7(x + 3) = x^2 + 3$
- 11) $7x - 7 = x^2 + 5$
- 12) $7x - 7 = x + 5$
- 13) $\frac{6}{x+13} = \frac{x}{x+3}$
- 14) $5x = (x - 8)(x + 3)$

Section B

Factor.

- 15) $x^2 - 20x + 91$
- 16) $20x^2 - 48x + 16$
- 17) $20x^2 + 321xy + 16y^2$
- 18) $x^{16} - 1$
- 19) $20x^2 + 59x - 16$
- 20) $20x^8 - 32x^4y^3 - 16y^6$
- 21) $3x^6 - 15x^5 + 6x^4$

Solve.

- 22) $5x(x - 3) = 4x^2 - 50$
- 23) $x^2 - 7x - 10x = 36 - 17x$
- 24) $(x + 3)^2 = 15 - (3 - 4x)$
- 25) $(x - 3)^2 = (x + 5)(x - 5)$
- 26) $(x - 5)(x - 7) = 4x^2 + 6x - 85$
- 27) $300 - 3x^2(x - 4) = (x^2 - 100)(2x - 3)$