

Summer Assignment - Part 1

Please submit this assignment to room 603 during Freshman Orientation or by August 4.

Directions:

Step 1: Print out and complete ALL Sections below.

Step 2: Using the included answer key, grade your work.

Step 3: Complete the Analysis Form to determine your strengths and weaknesses.

Step 4: Complete Summer Assignment - Part 2 for each identified weakness.

Step 5: Complete the Analysis Form.

Section 1: Quadratics

Factor each completely.

1) $x^2 - 4x$

2) $x^2 + 17x + 70$

3) $2x^2 - 10x - 28$

4) $3m^3 + 22m^2 - 16m$

5) $9n^3 - 64n$

6) $9n^2 - 33n + 28$

7) $6n^3 + 5n^2 - 6n$

8) $8x^2 - 30x - 27$

9) $8x^3 + 16x^2 - 90x$

10) $8m^3 + 24m^2 + 18m$

Solve each equation by factoring.

11) $16x^2 - 18x - 20 = 2x^2$

12) $11x^2 - 146x + 180 = -7x^2 - 8x$

Solve each equation by taking square roots.

13) $5x^2 - 4 = 16$

14) $64n^2 - 10 = -9$

15) $8m^2 + 2 = 234$

16) $5x^2 + 5 = 245$

Solve each equation by completing the square.

17) $p^2 + 18p + 9 = -3$

18) $b^2 - 10b - 4 = 3$

Solve each equation with the quadratic formula.

19) $6x^2 + x - 40 = 0$

20) $5a^2 - 2a - 2 = 0$

21) $10n^2 + 6n - 26 = -8$

22) $4n^2 - n - 136 = 2$

Section 2: Radical Expressions

List the first 30 perfect square numbers from memory:

Simplify.

23) $\sqrt{20}$

24) $\sqrt{448}$

25) $2\sqrt{150x^2}$

26) $-7\sqrt{108m}$

27) $-3\sqrt{196m^2p^4q^2}$

28) $-5\sqrt{50x^3y^2z^4}$

Simplify.

29) $\sqrt{2x^3} \cdot 2\sqrt{2x^2}$

30) $\sqrt{15v^3} \cdot -3\sqrt{5v^3}$

31) $5\sqrt{3}(\sqrt{6} + 5x)$

32) $4\sqrt{5}(\sqrt{2} + 3x)$

$$33) (-4\sqrt{3} + \sqrt{5})(2\sqrt{3} + \sqrt{5})$$

$$34) (4 + \sqrt{5r})(1 - 2\sqrt{5})$$

$$35) 2\sqrt{2} - 4\sqrt{2}$$

$$36) -4\sqrt{3} + 4\sqrt{27}$$

Section 3: Properties of Exponents

Simplify. Your answer should contain only positive exponents.

$$37) 2y \cdot 4y$$

$$38) 3u^{-2}v^4 \cdot u^0$$

$$39) (3x^0y^{-1})^2$$

$$40) (2y)^{-4}$$

$$41) \frac{2x^2y^4}{4x^{-4}}$$

$$42) \frac{2x^{-2}y^3}{x^4}$$

$$43) \left(\frac{(2ab^{-4} \cdot a^{-3}b^0)^2}{(2b^2)^3} \right)^2$$

$$44) \left(\frac{x^3y^2}{2y^0 \cdot 2x^{-4}y^{-4}} \right)^3$$

Answers to Summer Assignment - Part 1

- | | | | |
|---|---|--|-------------------------------------|
| 1) $x(x-4)$ | 2) $(x+7)(x+10)$ | 3) $2(x+2)(x-7)$ | 4) $m(3m-2)(m+8)$ |
| 5) $n(3n-8)(3n+8)$ | 6) $(3n-7)(3n-4)$ | 7) $n(2n+3)(3n-2)$ | 8) $(2x-9)(4x+3)$ |
| 9) $2x(2x+9)(2x-5)$ | 10) $2m(2m+3)^2$ | 11) $\left\{-\frac{5}{7}, 2\right\}$ | 12) $\left\{\frac{5}{3}, 6\right\}$ |
| 13) $\{2, -2\}$ | 14) $\left\{\frac{1}{8}, -\frac{1}{8}\right\}$ | 15) $\{\sqrt{29}, -\sqrt{29}\}$ | 16) $\{4\sqrt{3}, -4\sqrt{3}\}$ |
| 17) $\{-9 + \sqrt{69}, -9 - \sqrt{69}\}$ | 18) $\{5 + 4\sqrt{2}, 5 - 4\sqrt{2}\}$ | 19) $\left\{\frac{5}{2}, -\frac{8}{3}\right\}$ | |
| 20) $\left\{\frac{1 + \sqrt{11}}{5}, \frac{1 - \sqrt{11}}{5}\right\}$ | 21) $\left\{\frac{-3 + 3\sqrt{21}}{10}, \frac{-3 - 3\sqrt{21}}{10}\right\}$ | 22) $\left\{6, -\frac{23}{4}\right\}$ | |
| 23) $2\sqrt{5}$ | 24) $8\sqrt{7}$ | 25) $10x\sqrt{6}$ | 26) $-42\sqrt{3m}$ |
| 27) $-42p^2mq$ | 28) $-25z^2xy\sqrt{2x}$ | 29) $4x^2\sqrt{x}$ | 30) $-15v^3\sqrt{3}$ |
| 31) $15\sqrt{2} + 25x\sqrt{3}$ | 32) $4\sqrt{10} + 12x\sqrt{5}$ | 33) $-19 - 2\sqrt{15}$ | |
| 34) $4 - 8\sqrt{5} + \sqrt{5}r - 10\sqrt{r}$ | 35) $-2\sqrt{2}$ | 36) $8\sqrt{3}$ | |
| 37) $8y^2$ | 38) $\frac{3v^4}{u^2}$ | 39) $\frac{9}{y^2}$ | 40) $\frac{1}{16y^4}$ |
| 41) $\frac{x^6y^4}{2}$ | 42) $\frac{2y^3}{x^6}$ | 43) $\frac{1}{4b^{28}a^8}$ | 44) $\frac{x^{21}y^{18}}{64}$ |

Areas of Strength:

Areas of Weakness:

After viewing the online resources and completing problems from section 2, complete the following:

1. After working through these materials, I now am confident in ...

Because...

2. I'm still not sure about...

3. My goals for math this year are...

I plan to reach my goals by...

4. My biggest fear for math this year is...

I plan to overcome this by...

Summer Assignment - Part 2

Section 1: Quadratics**Factor each completely.**

1) $x^2 + 7x$

2) $x^2 + 19x + 90$

3) $5x^2 + 10x - 75$

4) $35m^2 - 40m + 5$

5) $9x^4 - 4x^2$

6) $9p^2 + 64p - 64$

7) $9n^3 - 54n^2 + 80n$

8) $10r^2 + 29r + 10$

9) $30r^2 - 63r + 27$

10) $36b^2 - 192b + 256$

Solve each equation by factoring.

11) $4p^2 - 75p + 56 = -4p - 4p^2$

12) $7v^2 - 7 = 48v$

Solve each equation by taking square roots.

13) $8x^2 - 10 = 118$

14) $-1 + 25m^2 = 80$

15) $2m^2 + 1 = 175$

16) $6x^2 + 8 = 602$

Solve each equation by completing the square.

17) $n^2 - 16n + 45 = -3$

18) $m^2 - 4m - 23 = 9$

Solve each equation with the quadratic formula.

19) $8m^2 + 3m - 2 = 0$

20) $8n^2 + 7n - 3 = 0$

21) $2r^2 + 7r - 16 = -12$

22) $6n^2 - 7n - 84 = 6$

Section 2: Radical Expressions**List the first 30 perfect square numbers from memory:****Simplify.**

23) $\sqrt{18}$

24) $\sqrt{245}$

25) $8\sqrt{16v^3}$

26) $3\sqrt{147n^3}$

27) $-5\sqrt{32a^3b^4}$

28) $5\sqrt{252m^2n^2}$

Simplify.

29) $3\sqrt{15k^3} \cdot -3\sqrt{15k}$

30) $\sqrt{15x^2} \cdot \sqrt{3x^2}$

31) $\sqrt{6n}(2 + \sqrt{6})$

32) $2\sqrt{6}(\sqrt{5} - \sqrt{2v})$

$$33) (3\sqrt{3} - 4\sqrt{2})(\sqrt{3v} + \sqrt{2})$$

$$34) (-4 - 3\sqrt{3})(5 + \sqrt{3x})$$

$$35) -3\sqrt{63} + 2\sqrt{112}$$

$$36) 3\sqrt{128} - 3\sqrt{8}$$

Section 3: Properties of Exponents

Simplify. Your answer should contain only positive exponents.

$$37) 2ba^{-3} \cdot 2a^2b^0$$

$$38) 4x^4 \cdot 3xy^0$$

$$39) (3y^0)^4$$

$$40) (3x^4y^{-2})^2$$

$$41) \frac{4yx^2}{x^0y^2}$$

$$42) \frac{uv^2}{2uv^0}$$

$$43) \frac{2x^0y^0 \cdot (2x^{-2}y^{-4})^3}{2x^4y^4}$$

$$44) \frac{u^0 \cdot 2uv}{(u^0v^0)^{-1}}$$

Answers to Summer Assignment - Part 2

- | | | | |
|---|--|---|--------------------------------------|
| 1) $x(x+7)$ | 2) $(x+9)(x+10)$ | 3) $5(x-3)(x+5)$ | 4) $5(7m-1)(m-1)$ |
| 5) $x^2(3x-2)(3x+2)$ | 6) $(p+8)(9p-8)$ | 7) $n(3n-10)(3n-8)$ | 8) $(2r+5)(5r+2)$ |
| 9) $3(5r-3)(2r-3)$ | 10) $4(3b-8)^2$ | 11) $\left\{\frac{7}{8}, 8\right\}$ | 12) $\left\{-\frac{1}{7}, 7\right\}$ |
| 13) $\{4, -4\}$ | 14) $\left\{\frac{9}{5}, -\frac{9}{5}\right\}$ | 15) $\{\sqrt{87}, -\sqrt{87}\}$ | 16) $\{3\sqrt{11}, -3\sqrt{11}\}$ |
| 17) $\{12, 4\}$ | 18) $\{8, -4\}$ | 19) $\left\{\frac{-3+\sqrt{73}}{16}, \frac{-3-\sqrt{73}}{16}\right\}$ | |
| 20) $\left\{\frac{-7+\sqrt{145}}{16}, \frac{-7-\sqrt{145}}{16}\right\}$ | 21) $\left\{\frac{1}{2}, -4\right\}$ | 22) $\left\{\frac{9}{2}, -\frac{10}{3}\right\}$ | |
| 23) $3\sqrt{2}$ | 24) $7\sqrt{5}$ | 25) $32v\sqrt{v}$ | 26) $21n\sqrt{3n}$ |
| 27) $-20b^2a\sqrt{2a}$ | 28) $30mn\sqrt{7}$ | 29) $-135k^2$ | 30) $3x^2\sqrt{5}$ |
| 31) $2\sqrt{6n}+6\sqrt{n}$ | 32) $2\sqrt{30}-4\sqrt{3v}$ | 33) $9\sqrt{v}+3\sqrt{6}-4\sqrt{6v}-8$ | |
| 34) $-20-4\sqrt{3x}-15\sqrt{3}-9\sqrt{x}$ | 38) $12x^5$ | 35) $-\sqrt{7}$ | 36) $18\sqrt{2}$ |
| 37) $\frac{4b}{a}$ | | 39) 81 | 40) $\frac{9x^8}{y^4}$ |
| 41) $\frac{4x^2}{y}$ | 42) $\frac{v^2}{2}$ | 43) $\frac{8}{x^{10}y^{16}}$ | 44) $2uv$ |