

Summer Math Work

Directions: Complete all the problems in this packet showing all work. This work should be completed, to the best of your ability, by the first day of school. Please give yourself time to process and remember the skills and do not rush the process. You will not turn in your Summer Math at registration. You will need to bring it to class on the first day of school. Please note that all of the material in this packet was covered in previous math classes. The packet will be reviewed during the first week of class. The test on this work will be given at the end of the first week of school and will count as your first TEST grade. Below are some websites that contain videos or notes on skills that you may need to review. You are expected to show all work. Problems that are skipped or problems that do not show work where work should be shown will be marked wrong. Remember, the point is to review the process behind previous skills rather than just having a correct answer.

1. [Khanacademy.org](https://www.khanacademy.org)
2. [Youtube.com](https://www.youtube.com)
3. [Coolmath.com](https://www.coolmath.com)
4. [Purplemath.com](https://www.purplemath.com)

Summer Math Test P/S

Simplify each expression.

1) $\frac{x^2 - 2x - 15}{9x - 45}$

A) $\frac{x+3}{9}$

B) $\frac{5x+8}{2x+5}$

C) $\frac{9}{x+3}$

D) $\frac{x-7}{x-6}$

2) $\frac{n^2 - 2n - 24}{n+3} \cdot \frac{n+3}{6n+24}$

A) $n-7$

B) n

C) 1

D) $\frac{n-6}{6}$

3) $\frac{n-3}{3n-9} \div \frac{1}{n-2}$

4) $\frac{p^2 + p - 12}{p-4} \div \frac{p^2 + p - 12}{8}$

Write each expression in exponential form.

5) $(\sqrt[4]{5n})^3$

A) $(5n)^{\frac{3}{4}}$

B) $(6n)^{\frac{5}{3}}$

C) $(6n)^{\frac{1}{2}}$

D) $n^{\frac{3}{2}}$

6) $(\sqrt[3]{x})^5$

A) $x^{\frac{3}{2}}$

B) $x^{\frac{5}{2}}$

C) $x^{\frac{1}{4}}$

D) $x^{\frac{5}{3}}$

Write each expression in radical form.

7) $(x^2)^{\frac{1}{6}}$

A) $(\sqrt[3]{6x})^5$

B) $\sqrt[6]{x^2}$

C) $(\sqrt{7x})^5$

D) $\sqrt{x}$

8) $n^{\frac{5}{4}}$

A) $(\sqrt{7n})^3$

B) $(\sqrt{10n})^5$

C) $(\sqrt{2n})^5$

D) $(\sqrt[4]{n})^5$

Simplify.

9) $\frac{4\sqrt{16}}{\sqrt{25}}$

A) $\frac{16}{5}$

B) $\frac{2\sqrt{3}}{5}$

C) $\frac{12}{5}$

D) $\frac{3}{4}$

10) $\frac{4\sqrt{2}}{3+\sqrt{5}}$

A) $\frac{-15+3\sqrt{5}}{20}$

B) $3\sqrt{2}-\sqrt{10}$

C) $\frac{6\sqrt{5}-9\sqrt{2}}{2}$

D) $\frac{-4\sqrt{2}-4\sqrt{5}}{3}$

Write each expression in exponential form.

11) $(\sqrt{p})^3$

A) $p^{\frac{5}{2}}$

B) $p^{\frac{3}{2}}$

C) $(7p)^{\frac{1}{2}}$

D) $p^{\frac{1}{2}}$

12) $(\sqrt[4]{5n})^7$

A) $n^{\frac{1}{2}}$

B) $(7n)^{\frac{1}{3}}$

C) $(5n)^{\frac{3}{4}}$

D) $(5n)^{\frac{7}{4}}$

Solve each equation. Remember to check for extraneous solutions.

13) $\sqrt{11-r} = \sqrt{3r-9}$

14) $\sqrt{2a-3} = \sqrt{3-a}$

15) $10 = \sqrt{-5-15x}$

16) $2 = \sqrt{5-x}$

Divide.

17) $\frac{x^3 + 2x^2 - 32x + 30}{x-4}$

A) $x^2 + 6x - 10$, R 3

B) $x^2 + 4x - 10$, R 1

C) $x^2 + 4x - 5$, R -7

D) $x^2 + 6x - 8$, R -2

18) $\frac{x^3 - x^2 - 25x + 23}{x+5}$

A) $x^2 - 6x + 8$, R -3

B) $x^2 - 6x + 2$

C) $x^2 - 6x + 5$, R -2

D) $x^2 - 6x + 6$, R -4

Evaluate each function at the given value.

19) $f(x) = x^4 + 4x^3 - 2x^2 + 15x - 3$ at $x = -5$

A) 5

B) -3

C) -2

D) -1

20) $f(x) = -6x^4 - 18x^3 + 22x^2 - 14x - 16$ at $x = -4$

A) -3

B) 8

C) -8

D) 5

Solve each equation by factoring.

21) $x^2 - 15x + 56 = 0$

A) $\{-8, -7\}$

B) $\{-6, 4\}$

C) $\{8, 7\}$

D) $\{-5, -4\}$

22) $x^2 + 3x - 28 = 0$

A) $\{-7, 4\}$

B) $\{-8, 7\}$

C) $\{7, 4\}$

D) $\{-7, -1\}$

Factor each completely.

23) $6x^3 + 21x^2 + 14x + 49$

- A) $(3x^2 - 7)(2x + 7)$
- B) $(3x^2 - 7)(3x^2 + 7)$
- C) $(3x^2 + 7)(2x - 7)$
- D) $(3x^2 + 7)(2x + 7)$

24) $3p^3 - 18p^2 - p + 6$

- A) $(3p^2 + 1)(p - 6)$
- B) $3(p - 1)(p^2 - 2)$
- C) $(3p^2 - 1)(p - 6)$
- D) $3(p^2 - 2)(p + 1)$

Evaluate each expression.

25) $\log_3 243$

- A) -2
- B) -5
- C) -3
- D) 5

26) $\log_5 25$

- A) 3
- B) 2
- C) -2
- D) 5

Rewrite each equation in exponential form.

27) $\log_8 \frac{1}{64} = -2$

- A) $(-2)^{\frac{1}{64}} = 8$
- B) $8^{-2} = \frac{1}{64}$
- C) $\left(\frac{1}{64}\right)^8 = -2$
- D) $(-2)^8 = \frac{1}{64}$

28) $\log_{12} \frac{1}{144} = -2$

- A) $\left(\frac{1}{144}\right)^{-2} = 12$
- B) $12^{-2} = \frac{1}{144}$
- C) $(-2)^{\frac{1}{144}} = 12$
- D) $(-2)^{12} = \frac{1}{144}$

Represent the sample space using set notation.

29) A hot dog stand offers both small and large hot dogs. Each hot dog can be ordered plain or with mustard.

- A) $\{(S, S), (S, L), (L, S), (L, L)\}$
- B) $\{(P, P), (P, M), (M, P), (M, M)\}$
- C) $\{(S, P), (S, M)\}$
- D) $\{(S, P), (S, M), (L, P), (L, M)\}$

30) A soccer player takes two penalty kicks in a game. Each attempt results in a goal or a miss.

- A) $\{(G, G), (M, G)\}$
- B) $\{(G, G), (G, M), (M, G), (M, M)\}$
- C) $\{(G, G), (G, M)\}$
- D) $\{(G, G), (M, M)\}$

Determine whether the scenario involves independent or dependent events.

31) A basket contains six apples and six peaches. You randomly select one piece of fruit and eat it. Then you randomly select another piece of fruit. The first piece of fruit is an apple and the second piece is a peach.

- A) Dependent B) Independent

32) A spinner has an equal chance of landing on each of its seven numbered regions. You spin twice. The first spin lands in region two and the second spin lands in region seven.

- A) Independent B) Dependent

33) You select two cards from a standard shuffled deck of 52 cards. Both selected cards are diamonds. (Note that 13 of the 52 cards are diamonds.)

- A) Independent B) Dependent

34) A bag contains six red marbles and six blue marbles. You randomly pick a marble and then return it to the bag before picking another marble. The first marble is red and the second marble is blue.

- A) Dependent B) Independent

Determine if the scenario involves mutually exclusive events.

35) There are ten shirts in your closet, five blue and five green. Two of the blue shirts and three of the green shirts fit well. The others are too big. You randomly select a shirt to wear. It is green or is too big.

- A) Not mutually exclusive
B) Mutually exclusive

36) You roll a fair six-sided die. The die shows a two or a six

- A) Mutually exclusive
B) Not mutually exclusive

37) A litter of kittens consists of three gray kittens, two black kittens, and three mixed-color kittens. You randomly pick one kitten. The kitten is gray or mixed-color.

- A) Not mutually exclusive
B) Mutually exclusive

38) A box of chocolates contains six milk chocolates and four dark chocolates. Three of the milk chocolates and one of the dark chocolates have peanuts inside. You randomly select and eat a chocolate. It is a milk chocolate or has no peanuts inside.

- A) Not mutually exclusive
B) Mutually exclusive