

1. Two urns each contain purple balls and green balls. The first urn contains five purple balls and three green balls. The second urn contains three purple balls and five green balls. A ball is randomly drawn from each urn. What is the probability that both balls are purple?
2. Shari has twelve cards, numbered from one to twelve. She randomly draws three cards with replacement. What is the probability that Shari draws an even card then two odd cards?
[A] $\frac{1}{16}$ [B] $\frac{1}{4}$ [C] $\frac{1}{8}$ [D] $\frac{3}{8}$
3. A drawer contains four red socks, eight white socks, and four blue socks. A sock is randomly drawn from the drawer and replaced, and a second sock is drawn from the drawer. What is the probability that the first sock is red and the second is blue?
4. A jar contains 10 sequins, 13 beads, and 7 seed pearls. What are the odds of randomly picking a sequin from the jar?
5. Twelve pilots based in Albany and 8 pilots based in Atlanta have formed a work committee. A subcommittee made up of 7 people from the group will delegate the work to be done. What are the odds that the subcommittee will contain 4 pilots from Albany and 3 from Atlanta?
6. What is the probability of randomly selecting an ace from a standard deck of cards?
7. Find the probability of selecting a vowel from the letters in the word *onomatopoeia*.
8. How many ways can four committee members be selected from nine club members?
9. How many ways can seven cards be arranged on a shelf?
10. A music band is making a new CD with nine songs. How many ways can the songs be arranged on the CD?
11. If no digit may be used more than once, how many five-digit numbers can be formed using only the digits 1, 6, 7, 4, 9, and 3?

12. For the following arithmetic sequence, find the eleventh term and find n if $a_n = 48$:
 4, 6, 8, 10, . . .
13. The partial table shows the cost of shipping and handling when ordering from a catalog. How much will shipping and handling cost for an order worth \$28?

Cost of Order	Shipping & Handling
\$0 - 6	\$5.00
\$6 - 12	\$6.60
\$12 - 18	\$8.20
\$18 - 24	\$9.80

- [A] \$13.00 [B] \$12.60 [C] \$11.40 [D] \$10.60
14. Find the sum: $15 + 13 + 11 + \dots + (-69)$
 [A] -1483 [B] -2322 [C] -1161 [D] 108
15. Find the sum of the first 29 terms of the arithmetic series in which $a_1 = 6$ and $d = 6$.
16. Evaluate: $\sum_{k=3}^7 \left(\frac{1}{2}\right)^k$
17. Find the fourth term of the geometric sequence if $a_1 = 4$ and $r = -4$.
18. Find the eighth term of the geometric sequence for which $a_1 = 5$ and $r = \frac{1}{2}$.
19. Find one geometric mean between 7 and 112.
20. Find the sum of the first 7 terms of the series.
 $\frac{1}{2} + 2 + 8 + \dots$

21. Write the terms for the geometric series and find the sum: $\sum_{n=1}^6 2\left(\frac{1}{2}\right)^{n-1}$

22. Find the sum of the series: $5 + \frac{5}{3} + \frac{5}{9} + \frac{5}{27} + \dots$

23. Expand: $(3m + 2n)^4$

24. Find the fifth term in the expansion of $(5x + 3y)^7$.

25. Write the equation in logarithmic form: $4^x = 16$

26. Express in exponential form: $\log_2 \frac{1}{8} = -3$

27. Evaluate: $\log_4 \left(\frac{1}{16}\right)$

Solve:

28. $\log_{1296} x = -\frac{3}{4}$

29. $\log_4(x + 7) - \log_4 x > 2$

30. Given $\log_z 5 = 0.898$ and $\log_z 3 = 0.613$, find $\log_z 15$.

Solve:

31. $\log_5(x + 5) - \log_5 x = 3$

32. $3^{z-4} = 6^{6z+2}$

Solve:

33. $9^{2t-1} < 20$

34. Express the logarithm in terms of common logarithms, then approximate its value to four decimal places: $\log_2 13$

Solve:

35. $3e^{3x} - 6 = 3$

36. $e^{-2x} > 20$

Simplify:

37. $\frac{m^2 - 81}{8m} \cdot \frac{5m}{m+9}$

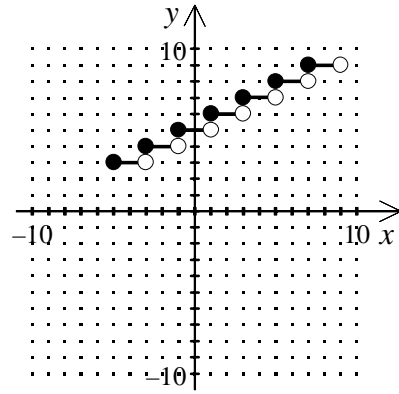
38. $\frac{s^2 + 10s}{s^2 - 8s + 12} \div \frac{s+10}{s-6}$

39. $\frac{\frac{c^2 - 6c + 8}{c^2 + 3c + 2}}{\frac{c-4}{c+2}}$

40. $\frac{x}{x-4} + \frac{2x+1}{x^2 - 7x + 12}$

41. $\frac{8u}{u^2 - 9} - \frac{3}{u^2 + 11u + 24}$

42. Identify the function represented by the graph:



[1] _____

[2] _____

[3] _____

[4] _____

[5] _____

[6] _____

[7] _____

[8] _____

[9] _____

[10] _____

[11] _____

[12] _____

[13] _____

[14] _____

[15] _____

[16] _____

[17] _____

[18] _____

[19] _____

[20] _____

[21] _____

[22] _____

[23] _____

[24] _____

[25] _____

[26] _____

[27] _____

[28] _____

[29] _____

[30] _____

[31] _____

[32] _____

[33] _____

[34] _____

[35] _____

[36] _____

[37] _____

[38] _____

[39] _____

[40] _____

[41] _____

[42] _____

[1] $\frac{15}{64}$ _____

[2] [C] _____

[3] $\frac{1}{16}$ _____

[4] 1:2 _____

[5] 231:415 _____

[6] $\frac{1}{13}$ _____

[7] $\frac{2}{3}$ _____

[8] 126 _____

[9] 5040 _____

[10] 362,880 _____

[11] 720

eleventh term: 24
[12] $n = 23$

[13] [C]

[14] [C]

[15] 2610

[16] 0.242

[17] - 256

[18] $\frac{5}{128}$

[19] - 28 or 28

[20] 2730.5

[21] $2+1+\frac{1}{2}+\frac{1}{4}+\frac{1}{8}+\frac{1}{16}=\frac{63}{16}$

[22] $\frac{15}{2}$

[23] $81m^4 + 216m^3n + 216m^2n^2 + 96mn^3 + 16n^4$

[24] $354,375x^3y^4$

[25] $x = \log_4 16$

[26] $2^{-3} = \frac{1}{8}$

[27] -2

[28] $\frac{1}{216}$

[29] $0 < x < \frac{7}{15}$

[30] 1.511

[31] $\frac{5}{124}$

[32] -0.8266

[33] $t < 1.1817$

[34] $\frac{\log 13}{\log 2}; 3.7004$

[35] 0.3662

[36] $x < -1.4979$

[37] $\frac{5(m-9)}{8}$

[38] $\frac{s}{s-2}$

[39] $\frac{c-2}{c+1}$

[40] $\frac{x^2 - x + 1}{(x-4)(x-3)}$

$$[41] \frac{8u^2 + 61u + 9}{(u+3)(u-3)(u+8)}$$

[42] greatest integer
