

ST. KATHARINE DREXEL PREP MATH DEPARTMENT
SUMMER MATH PACKET 2021-2022

THIS PACKET IS FOR STUDENTS ENTERING:
ALGEBRA II
11TH GRADE STUDENTS



DIRECTIONS: IN ORDER TO RECEIVE MAXIMUM CREDIT:

- **ALL PROBLEMS MUST BE COMPLETED.**
- **ALL WORK MUST BE SHOWN ON LOOSE LEAF PAPER AND MUST BE COMPLETED WITH A PENCIL ONLY. PAPERS WILL NOT BE GRADED IF THE WORK IS DONE WITH AN INK PEN.**
- **YOU MAY USE MATH WEBSITES SUCH AS KHAN ACADEMY FOR ASSISTANCE.**

DUE DATE: THE SUMMER MATH PACKET MUST BE SUBMITTED THE FIRST WEEK OF SCHOOL FOR A HOMEWORK GRADE. YOUR MATH TEACHER WILL SELECT PROBLEMS FROM THE MATH PACKET TO CREATE YOUR FIRST QUIZ IN YOUR MATH COURSE.

Simplify.

10. $\frac{1}{8} \cdot 5\frac{1}{7}$
 a. $\frac{1}{9}$ b. $4\frac{1}{2}$ c. $\frac{1}{17}$ d. $\frac{5}{19}$
11. $\frac{7}{8} + \frac{1}{6}$
 a. $\frac{25}{24}$ b. $\frac{24}{25}$ c. $\frac{7}{48}$ d. $\frac{5}{16}$
12. $-2 + (-3)$
 a. 1 b. 5 c. -1 d. -5
13. $-8 \cdot (-4)$
 a. -32 b. 32 c. 12 d. -12
14. $-25 \div 5$
 a. -20 b. -5 c. 5 d. 20
15. $8\sqrt{20}$
 a. $16\sqrt{5}$ b. $32\sqrt{5}$ c. 160 d. $20\sqrt{8}$
16. $\sqrt{12}$
 a. $6\sqrt{10}$ b. $4\sqrt{3}$ c. $2\sqrt{3}$ d. 6
17. Which product is not equal to 8?
 a. $\frac{32}{40} \times 10$ c. $\frac{40}{3} \times \frac{3}{5}$
 b. $\frac{3}{7} \times \frac{63}{4}$ d. $\frac{1}{5} \times \frac{120}{3}$
18. The table shows the sales of some salted snacks in different regions in the U.S. How many million pounds of pretzels were sold in the South Atlantic states?

Snack Sales (millions of pounds)

Region	Salted Snacks Sold	Tortilla Chips	Corn Chips	Pretzels
Mountain	292	26%	$5\frac{4}{5}\%$	$3\frac{1}{2}\%$
New England	261	$12\frac{2}{5}\%$	$4\frac{1}{10}\%$	$5\frac{4}{5}\%$
Pacific	591	$28\frac{1}{2}\%$	$5\frac{1}{10}\%$	$3\frac{2}{5}\%$
South Atlantic	681	$14\frac{1}{5}\%$	$4\frac{9}{10}\%$	$6\frac{1}{5}\%$

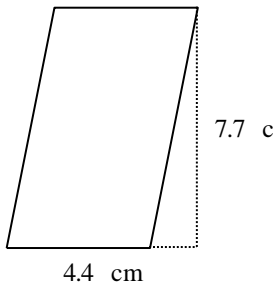
- a. about 44.2 million pounds c. about 68.1 million pounds
 b. about 34.2 million pounds d. about 14.8 million pounds

Divide.

- ___ 19. $\frac{2}{3} \div \frac{3}{6}$
a. $\frac{4}{3}$ b. 1 c. $\frac{3}{4}$ d. $\frac{1}{3}$
- ___ 20. $\frac{1}{7} \div \frac{9}{21}$
a. $\frac{3}{49}$ b. 3 c. $\frac{1}{3}$ d. $\frac{49}{3}$
- ___ 21. Solve the proportion $\frac{5}{8} = \frac{h}{40}$.
a. $\frac{1}{64}$ b. 1 c. 10 d. 25
- ___ 22. If $\frac{16}{9} = \frac{80}{n} = \frac{p}{27}$, what are n and p ?
a. 47, 46 b. 45, 46 c. 45, 48 d. 47, 48
- ___ 23. Write 336 mi in 11.2 h as a rate in simplest form.
a. 45 mi/h b. 30 mi/h c. 35 mi/h d. 40 mi/h
- ___ 24. Suppose $r = -2$, $d = -8$, and $e = 1$. Which expression equals -17 ?
a. $2r + 2d + 3e$ c. $3r + 4d + 4e$
b. $-8r + 3d + 2e$ d. $7r + 2d + 3e$
- ___ 25. Simplify $(-5 + 4^2)(3 - 5)^3$.
a. 88 b. -88 c. -44 d. 168
- ___ 26. Solve $T = \frac{V}{Q}$ for Q .
a. $\frac{T}{V}$ b. VT c. $\frac{V}{T}$ d. $V + T$
- ___ 27. Evaluate $y = (x + 2)(x - 5)$ for $x = 6$.
a. 8 b. 9 c. 88 d. 19
- ___ 28. Evaluate $V = \pi r^2 h$ for $r = 9$ and $h = 15$.
a. 3,817.04 b. 1,215 c. 6,361.73 d. 424.12

Find the area.

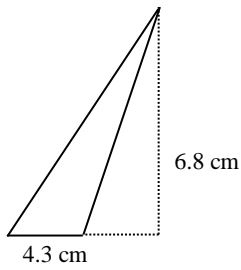
___ 29.



Not drawn to scale

- a. 12.1 cm^2 b. 33.88 cm^2 c. 24.2 cm^2 d. 67.76 cm^2

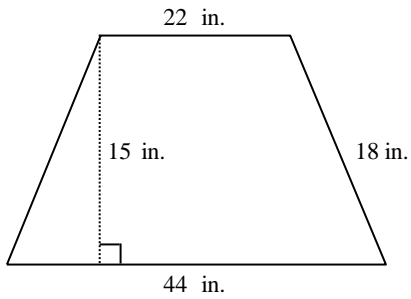
___ 30.



Not drawn to scale

- a. 58.48 cm^2 b. 22.2 cm^2 c. 29.24 cm^2 d. 14.62 cm^2

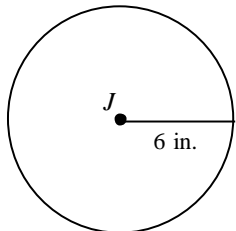
___ 31.



Not drawn to scale

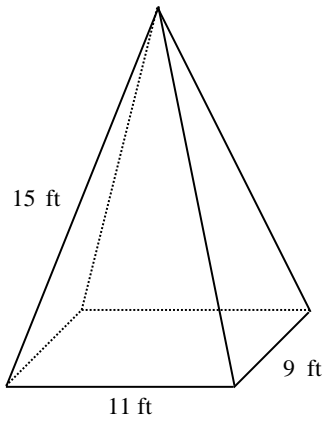
- a. 165 in.^2 b. 495 in.^2 c. 330 in.^2 d. 594 in.^2

___ 32. What is the area of the circle *J*, to the nearest square inch?



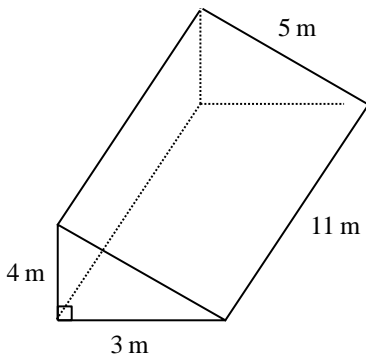
- a. 38 in.^2 b. 149 in.^2 c. 113 in.^2 d. 50 in.^2

- ___ 33. The pyramid has a rectangular base and faces that are isosceles triangles. Find the surface area to the nearest tenth.



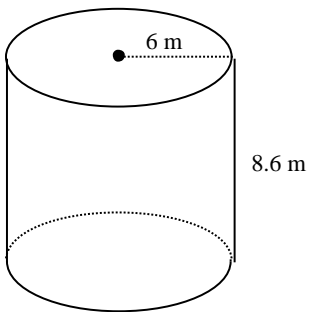
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- a. 600 ft^2 b. 381.3 ft^2 c. 399 ft^2 d. 663.6 ft^2
- ___ 34. Calculate the surface area of the right triangular prism.



Not drawn to scale

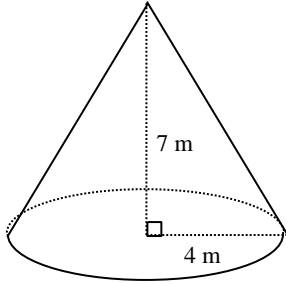
- a. 144 m^2 b. 100 m^2 c. 156 m^2 d. 111 m^2
- ___ 35. Find the surface area of the cylinder to the nearest square unit.



Not drawn to scale

- a. 324 m^2 b. 550 m^2 c. 388 m^2 d. 216 m^2

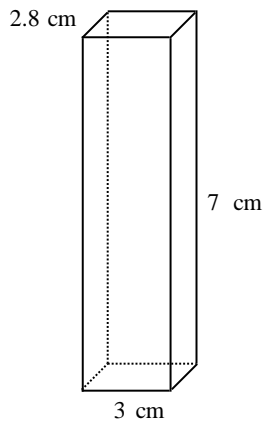
___ 36. Find the volume of the cone to the nearest hundredth.



Not drawn to scale

- a. 703.72 m^3 b. 117.29 m^3 c. 469.14 m^3 d. 351.86 m^3

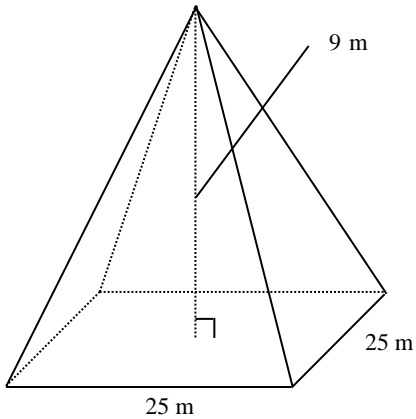
___ 37. Find the volume of the rectangular prism.



Not drawn to scale

- a. 21 cm^3 b. 117.6 cm^3 c. 98 cm^3 d. 58.8 cm^3

___ 38. Find the volume of the pyramid.



Not drawn to scale

- a. 1012.5 m^3 b. 2812.5 m^3 c. 1875 m^3 d. 675 m^3

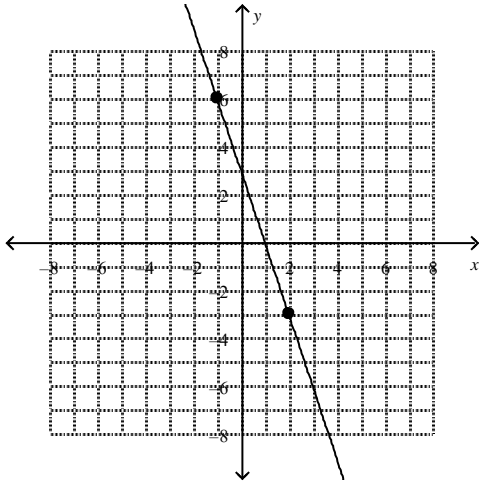
___ 39. A sphere has radius 5 cm. Find the volume to the nearest hundredth.

- a. 130.9 cm^3 b. 104.72 cm^3 c. 314.16 cm^3 d. 523.6 cm^3

___ 40. In which quadrant is the point $(-1, -4)$?

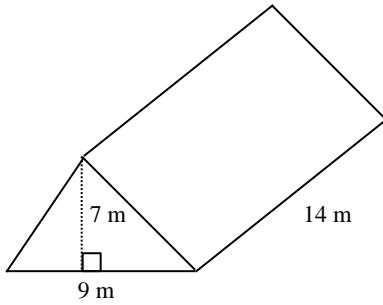
- a. II b. IV c. I d. III

___ 41. Find the slope of the line.



- a. $\frac{1}{3}$ b. $-\frac{1}{3}$ c. -3 d. 3

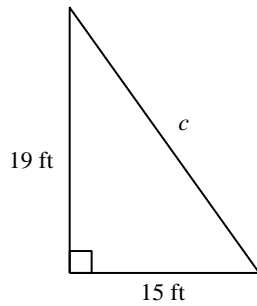
___ 42. Find the volume of the triangular prism.



Not drawn to scale

- a. 158 m^3 b. 189 m^3 c. 441 m^3 d. 882 m^3

___ 43. Find the value of c . Round to the nearest tenth.



Not drawn to scale

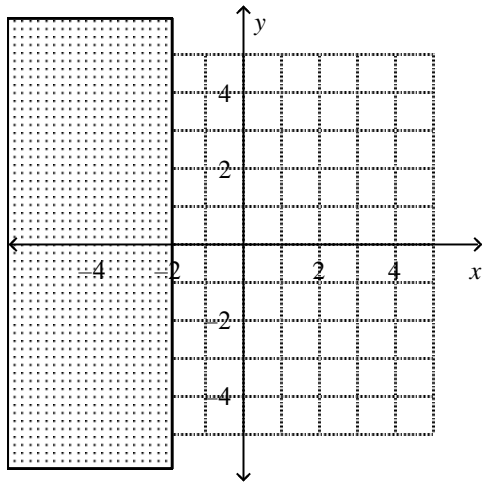
- a. 586 ft b. 24.2 ft c. 19.4 ft d. 15.6 ft

___ 44. Find the midpoint M of the segment with endpoints $C(4, 4)$ and $D(-2, 6)$

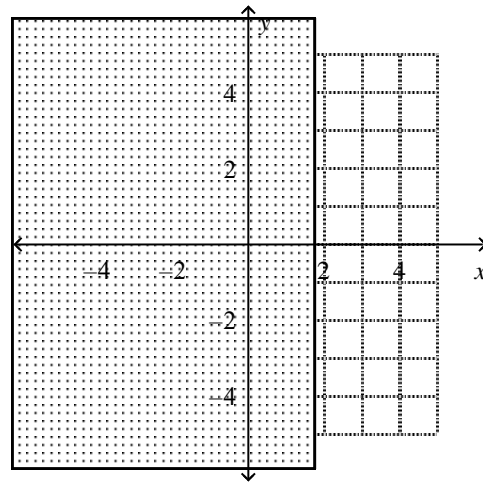
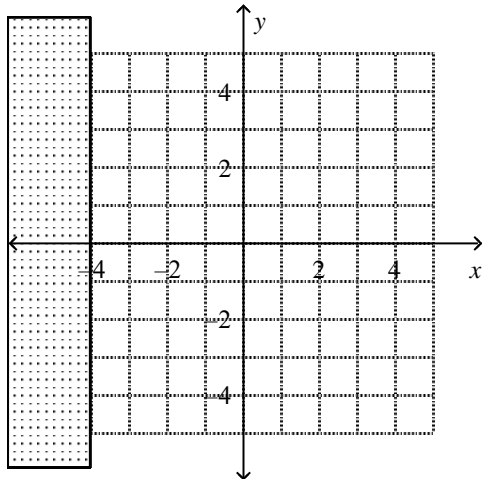
- a. $M(1, 5)$ b. $M(2, 10)$ c. $M(1, 10)$ d. $M(2, 5)$

Solve the equation.

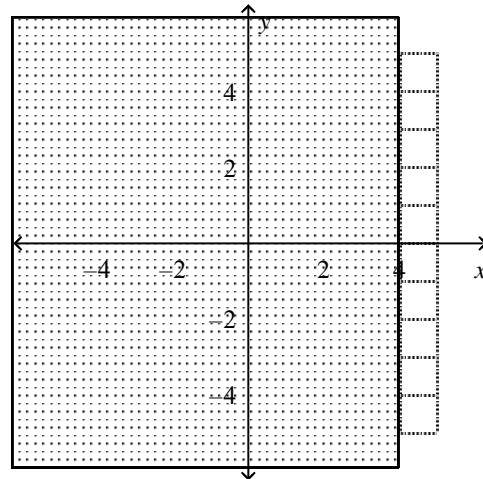
- ___ 45. $-3 = \frac{x}{8} - 2$
 a. 8 b. -8 c. -40 d. 40
- ___ 46. $9 + 8z = 41$
 a. 7 b. 6 c. 5 d. 4
- ___ 47. $4(y + 4) = 36$
 a. 5 b. 13 c. 6 d. 14
- ___ 48. $3|z| - 4 = 14$
 a. 8, -8 b. 7, -7 c. 6 d. 6, -6
- ___ 49. $-6|h - 4| = -24$
 a. 1, 8 b. 8 c. -1, -8 d. no solution
- ___ 50. Solve and graph $x - 5 \leq -9$.
 a. $x \leq -\frac{9}{5}$ c. $x \leq \frac{9}{5}$



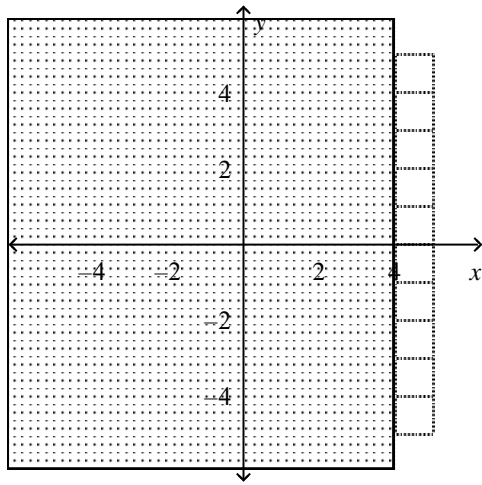
b. $x \leq -4$



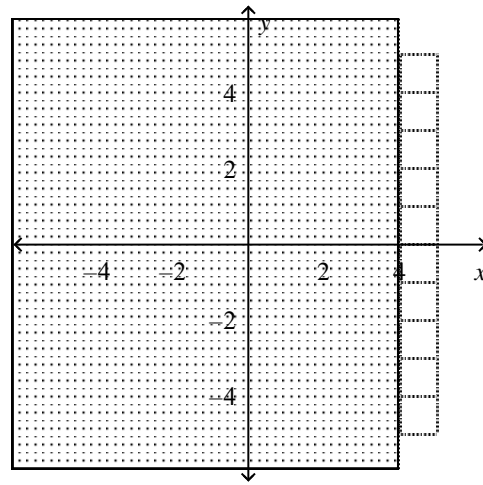
d. $x \leq 4$



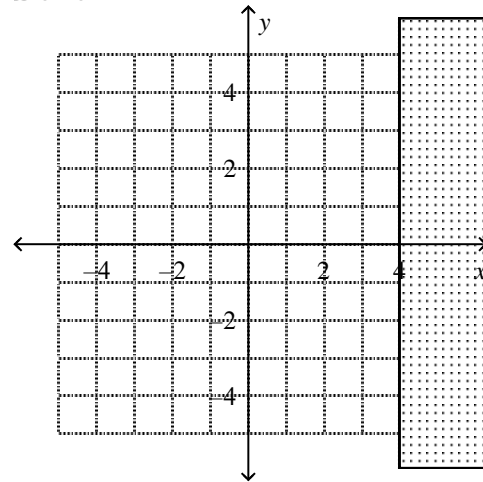
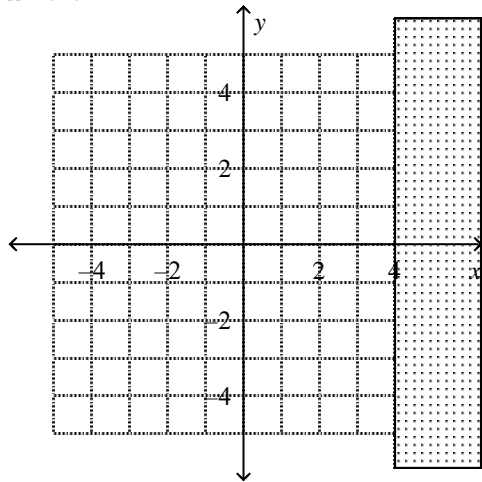
- ___ 51. Solve and graph $4x - 2 < 14$.
 a. $x < 4$ c. $x > 4$



b. $x < 4$

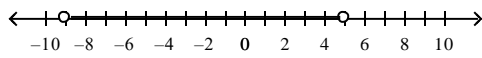


d. $x > 4$

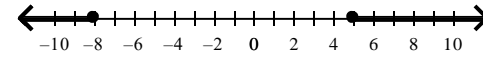


52. Solve $|d + 2| \geq 6$. Graph the solutions.

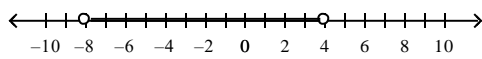
a. $-9 < d < 5$



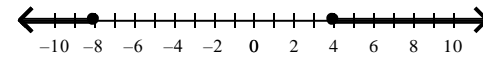
c. $-8 < d < 5$



b. $-8 > d > 4$

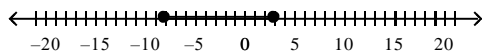


d. $d \leq -8$ or $d \geq 4$

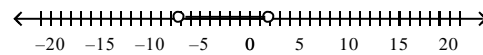


53. Solve $|4x + 10| < 18$. Graph the solutions.

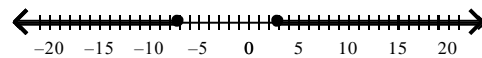
a. $-8 < x < 3$



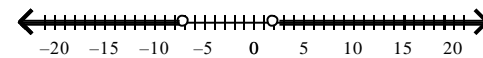
c. $-7 < x < 2$



b. $-7 < x < 3$

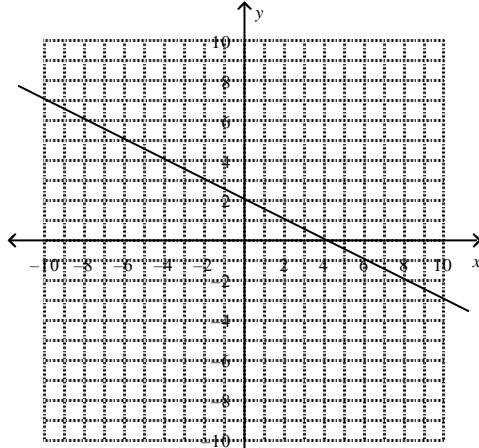


d. $-7 > x > 2$

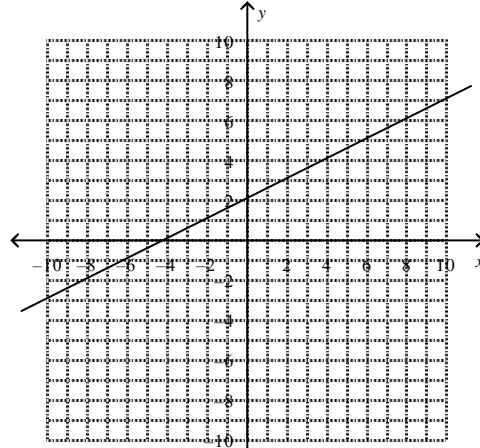


54. Graph $2x - 4y = 8$.

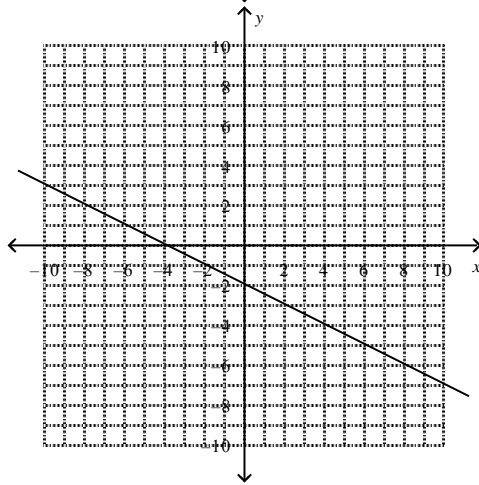
a.



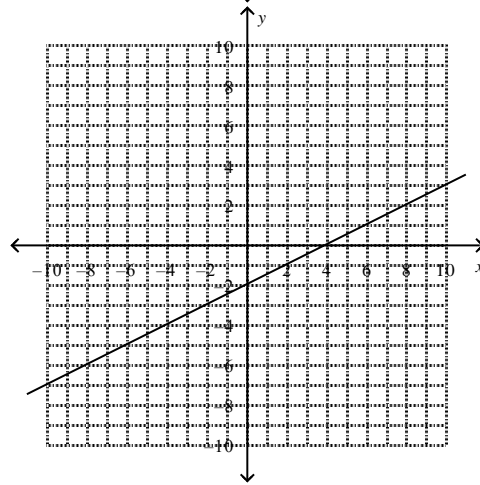
c.



b.

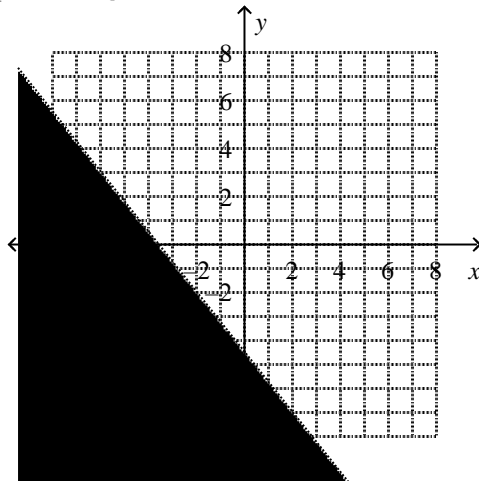


d.

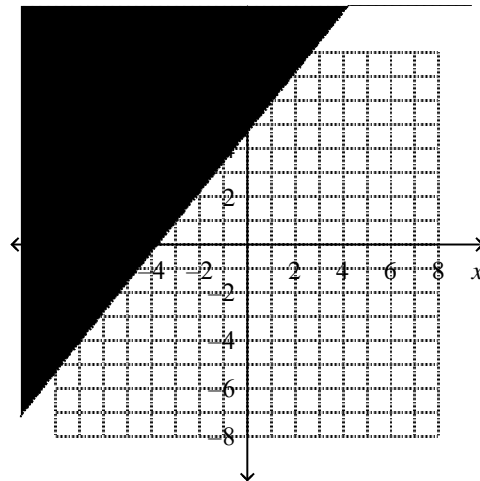


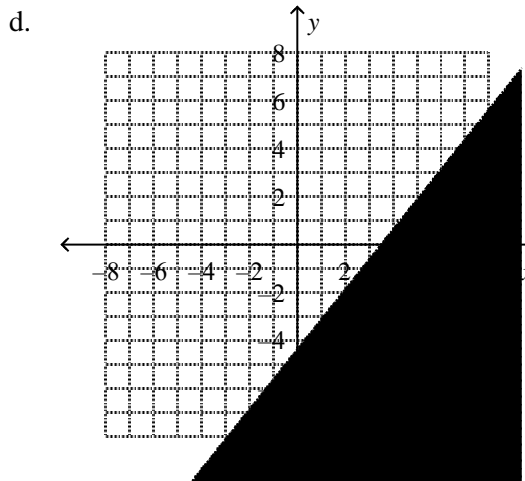
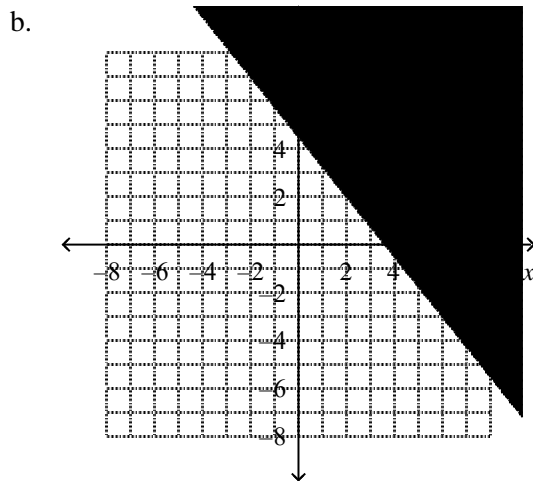
55. Graph $5x + 4y > 18$.

a.



c.





Simplify the expression.

___ 56. $(-3u^2r^6t^4)^3$
 a. $-27u^6r^{18}t^{12}$
 b. $-27u^2r^{18}t^{12}$

c. $-9u^6r^{18}t^4$
 d. $-9u^6r^6t^4$

___ 57. $\frac{(8^3x^3y^4)^3}{(8^3x^3y^4)^2}$
 a. $8^3x^3y^4$ b. $8^{-3}x^{-3}y^4$

c. $8^3x^3y^5$ d. $8^{-3}x^4y^5$

___ 58. $(6cd^2)^5(cd)^3$
 a. $30c^5d^{10}$
 b. $30c^8d^{10}$

c. $7776c^5d^{13}$
 d. $7776c^8d^{13}$

___ 59. $\frac{(xy^5)(x^5y)}{(x^8y)^3}$
 a. $\frac{y^4}{x^{18}}$ b. $\frac{y^3}{x^{18}}$

c. $\frac{x^3}{y^{18}}$ d. $\frac{x^{18}}{y^3}$

Simplify. Write the answer in standard form.

___ 60. $(3g^2 - 8g - 4) - (6g^2 + 4g - 5)$
 a. $9g^2 - 12g + 9$
 b. $9g^2 + 12g - 1$

c. $-3g^2 - 12g + 1$
 d. $-3g^2 + 12g + 1$

___ 61. $2(d^2 - 9d - 5) + (d^2 - 9)$
 a. $3d^2 + 18d - 10$
 b. $2d^2 - 27d - 10$

c. $3d^2 - 18d - 19$
 d. $2d^2 - 27d + 19$

Factor the expression.

___ 62. $m^2 - 11m + 30$
 a. $(m + 6)(m + 5)$
 b. $(m - 6)(m + 5)$

c. $(m - 6)(m - 5)$
 d. $(m + 6)(m - 5)$

- ___ 63. $15x^2 - 16xy + 4y^2$
 a. $(3x + 2y)(5x + 2y)$ c. $(3x + 2y)(5x - 2y)$
 b. $(3x - 2y)(5x + 2y)$ d. $(3x - 2y)(5x - 2y)$

Write the number in scientific notation.

- ___ 64. 48,000,000
 a. 4.8×10^9 c. 4.8×10^7
 b. 4.8×10^8 d. 48×10^6
- ___ 65. 0.0000234
 a. 2.34×10^{-5} c. 234×10^6
 b. 2.34×10^{-6} d. 23.4×10^5

Find the product or quotient. Write the answer in scientific notation and in standard form. Round to the appropriate number of significant digits.

- ___ 66. $(6.45 \times 10^2)(4.14 \times 10^{-4})$
 a. 2.6703×10^{-6} ; 0.0000026703 c. 2.6703×10^{-1} ; 0.26703
 b. 1.059×10^{-1} ; 0.1059 d. 6.45×10^{-1} ; 0.645
- ___ 67. $(5.2 \times 10^5) \div (6.44 \times 10^2)$
 a. 0.0081×10^{-3} ; 0.0081 c. 6.44×10^7 ; 644
 b. 3.349×10^2 ; 334.9 d. 8.1×10^2 ; 810

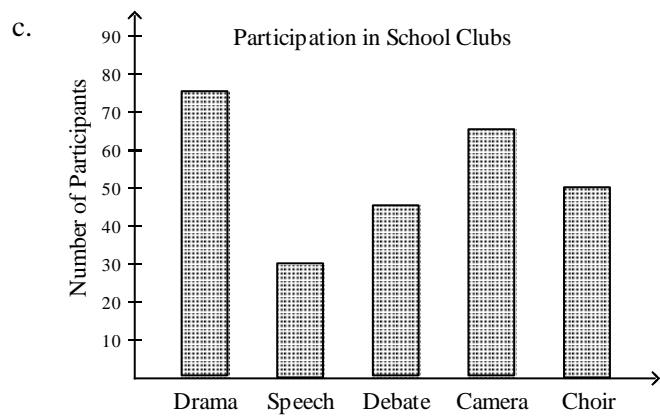
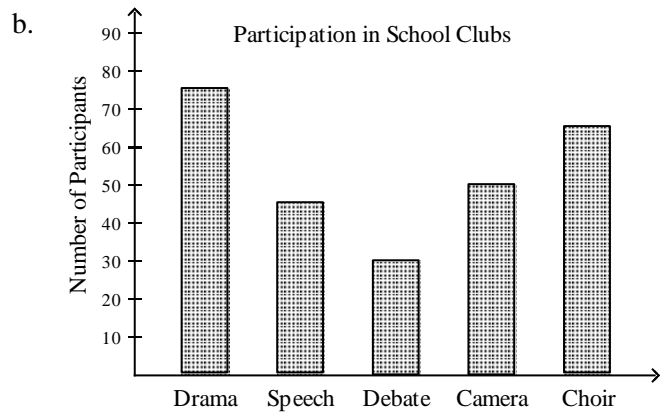
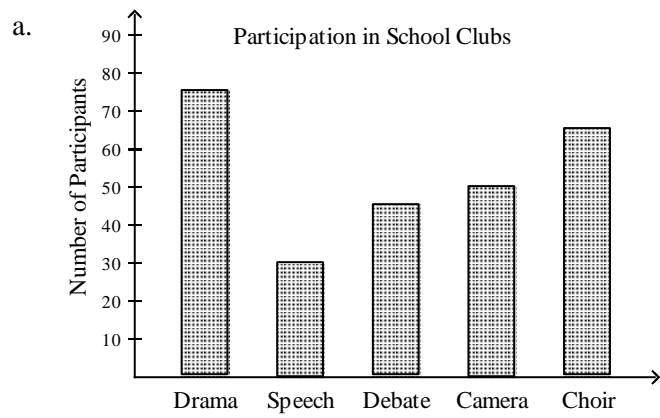
Simplify the radical expression.

- ___ 68. $\frac{7}{\sqrt{2}}$
 a. $\frac{\sqrt{7}}{2}$ b. $2\sqrt{7}$ c. $\frac{7\sqrt{2}}{2}$ d. $7\sqrt{2}$
- ___ 69. $\sqrt{98} + \sqrt{50} - \sqrt{72}$
 a. $2\sqrt{220}$ b. $6\sqrt{2}$ c. $18\sqrt{2}$ d. $\sqrt{76}$
- ___ 70. Find the distance between (3, 4) and (4, -6). If necessary, round to the nearest tenth.
 a. 10 units b. 101 units c. 7.3 units d. 53 units

- ___ 71. The number of patients treated at Dr. Jason's dentist office each day was recorded for eight days. Use the data 11, 18, 9, 18, 10, 15, 20, 8 to find the mean, median, and mode for this sample.
 a. 13.625, 14, 18 c. 13.625, 13, 18
 b. 12.625, 14, 18 d. 12.625, 13, 18
 b. 5.4, 7.7, 9.3, 4.2, 7.1 d. 6.1, 7.5, 7.3, 8.8, 4.9

- ___ 72. Which of the following bar graphs shows the number of participants in various school clubs as listed below?

Drama	Speech	Debate	Camera	Choir
75	30	45	50	65

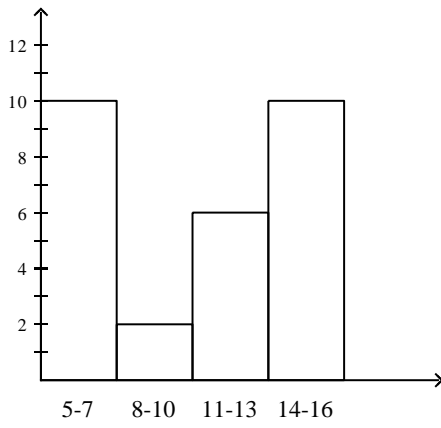


d. none of these

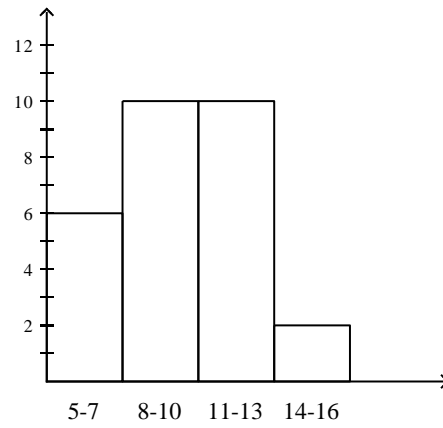
73. Which histogram uses the data in the table below?

Class Interval	Frequency
5-7	10
8-10	2
11-13	6
14-16	10

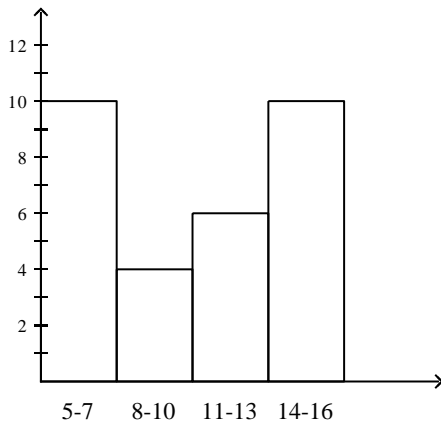
a.



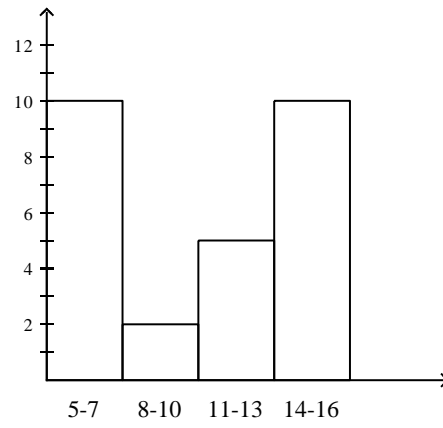
c.



b.



d.



74. Which number is not written in scientific notation?

a. 2.6×10^{-2}

c. 143.6×10^{-2}

b. 3.689×10^5

d. 9.561×10^2