ST. KATHARINE DREXEL PREP MATH DEPARTMENT

SUMMER MATH PACKET 2021-2022

THIS PACKET IS FOR STUDENTS ENTERING:

ALGEBRA II

11TH GRADE STUDENTS

<u>DIRECTIONS</u>: 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.**

<u>DUE DATE</u>: 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.

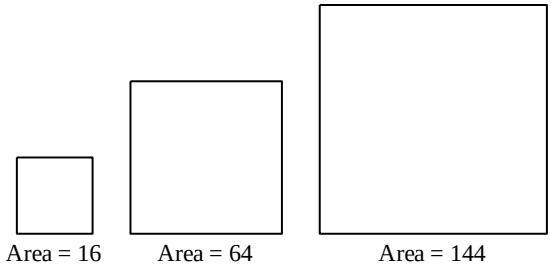
SUMMER MATH PACKET – ALGEBRA II 2021
11TH GRADE STUDENTS
Name_____

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. A triangle has an angle of 108°, which is twice the measure of another angle in the triangle. What are the measures of the three angles?
a. 28°, 54°, 113°
b. 18°, 54°, 108°
c. 28°, 54°, 108°
d. 54°, 108°, 162°

____ 2. The total number of horses and people at the riding academy for the Sunday session was 39. The total number of legs at the academy that day was 124. How many people were at the riding academy that Sunday?
a. 27 people
b. 16 people
c. 23 people
d. 12 people

____ 3. What is the perimeter of the fifth square in this pattern?



a. 60 units
b. 80 units
c. 400 units
d. 256 units

____ 4. A gardener builds a fence for a square garden that is 10 yd by 10 yd. A fence post is positioned at every corner and every 5 ft. How many fence posts will the gardener need?
a. 24 posts
b. 9 posts
c. 28 posts
d. 12 posts

____ 5. Robert spent $\frac{3}{5}$ of his money on lunch and $\frac{1}{6}$ of the money he had left on a snack and some juice. He left the house with $24. How much money did Robert return with?
a. $8
b. $6
c. $10
d. $12

____ 6. Which number does not equal $\frac{27}{30}$?
a. 90%
b. 0.27
c. 0.9
d. $\frac{9}{10}$

____ 7. Which percent equals 0.69?
a. 69%
b. 610%
c. 6.9%
d. 6.10%

____ 8. Sales tax in one state is 9%. What is the amount of tax on a $30.95 purchase?
a. $27.86
b. $9.31
c. $31.04
d. $2.79

____ 9. There are 1,332 people under the age 20 in Pierce City. This represents 14% of the total population. What is the total population?
a. 18,648 people
b. 13,320 people
c. 9,664 people
d. 9,514 people

Simplify.

____ 10. $\frac{1}{8} \cdot 5\frac{1}{7}$

a. $\frac{9}{14}$ b. $4\frac{1}{2}$ c. $1\frac{1}{7}$ d. $1\frac{5}{9}$

____ 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. $\frac{32}{40} \times 10$

b. $\frac{3}{7} \times \frac{63}{4}$

c. $\frac{40}{3} \times \frac{3}{5}$

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

b. about 34.2 million pounds

c. about 68.1 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. $2r + 2d + 3e$
b. $-8r + 3d + 2e$
c. $3r + 4d + 4e$
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 $x = 6$.

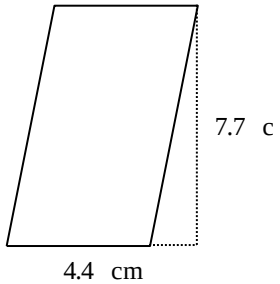
a. 8 b. 9 c. 88 d. 19

____ 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.

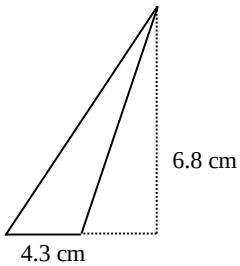
___ 29.



Not drawn to scale

a. 12.1 cm² b. 33.88 cm² c. 24.2 cm² d. 67.76 cm²

____ 30.



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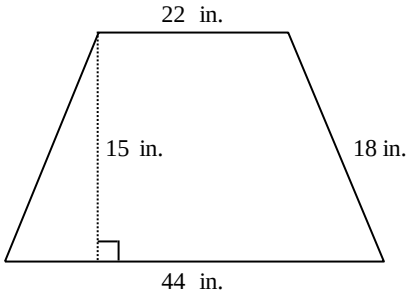
a. 58.48 cm² b. 22.2 cm² c. 29.24 cm² d. 14.62 cm²

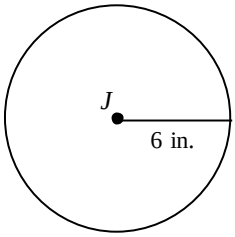
____ 31.



Not drawn to scale

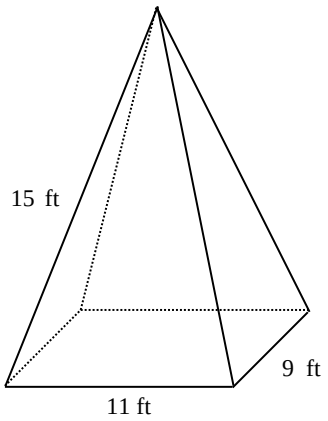
a. 165 in.² b. 495 in.² c. 330 in.² d. 594 in.²

____ 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

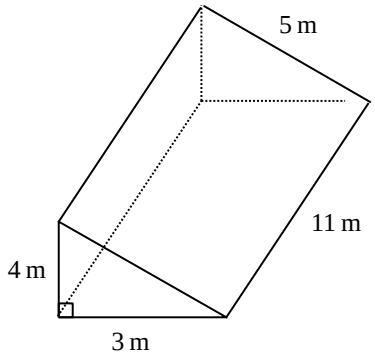
____ 33. The pyramid has a rectangular base and faces that are isosceles triangles. Find the surface area to the nearest tenth.



Not drawn to scale

a. 600 ft^2 b. 381.3 ft^2 c. 399 ft^2 d. 663.6 ft^2

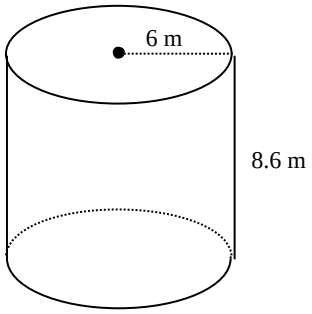
____ 34. Calculate the surface area of the right triangular prism.



Not drawn to scale

a. 144 m^2 b. 100 m^2 c. 156 m^2 d. 111 m^2

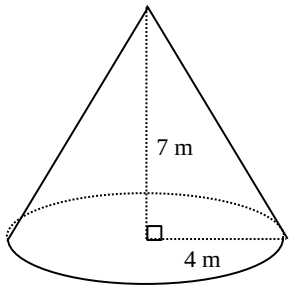
____ 35. Find the surface area of the cylinder to the nearest square unit.



Not drawn to scale

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

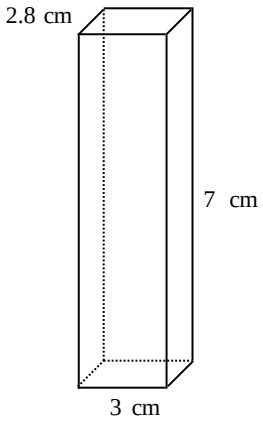
____ 36. Find the volume of the cone to the nearest hundredth.



Not drawn to scale

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

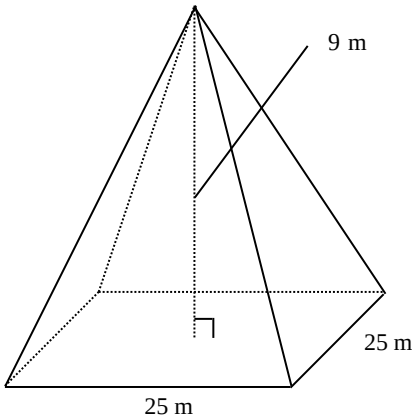
____ 37. Find the volume of the rectangular prism.



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

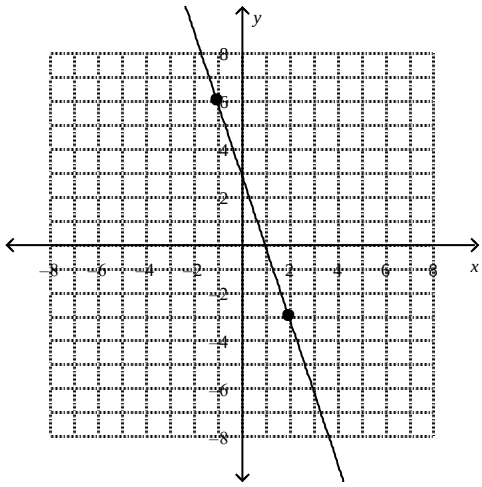
____ 39. A sphere has radius 5 cm. Find the volume to the nearest hundredth.

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)?

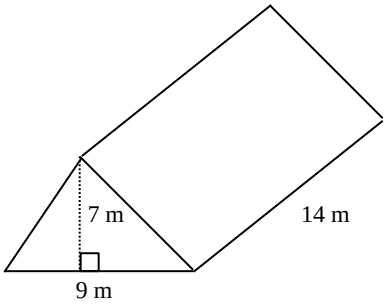
a. II b. IV c. I d. III

____ 41. Find the slope of the line.



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

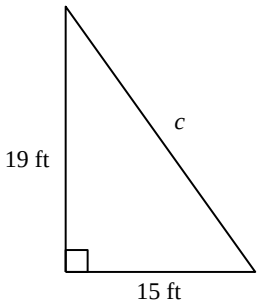
____ 42. Find the volume of the triangular prism.



Not drawn to scale

a. 158 m³ b. 189 m³ c. 441 m³ d. 882 m³

____ 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. $9 + 8n = 41$

a. 7 b. 6 c. 5 d. 4

____ 47. $4(y + 4) = 36$

a. 5 b. 13 c. 6 d. 14

____ 48. $3|n| - 4 = 14$

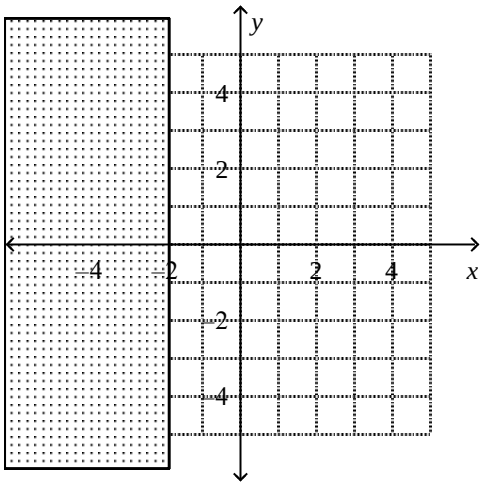
a. 8, –8 b. 7, –7 c. 6 d. 6, –6

____ 49. $-6|h - 4| = -24$

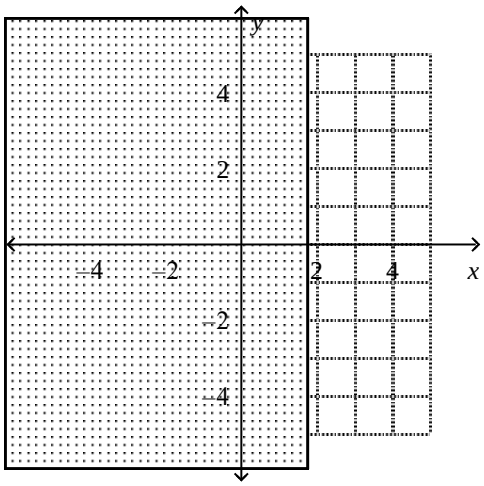
a. 1, 8 b. 8 c. –1, –8 d. no solution

____ 50. Solve and graph $x - 5 \leq -9$.

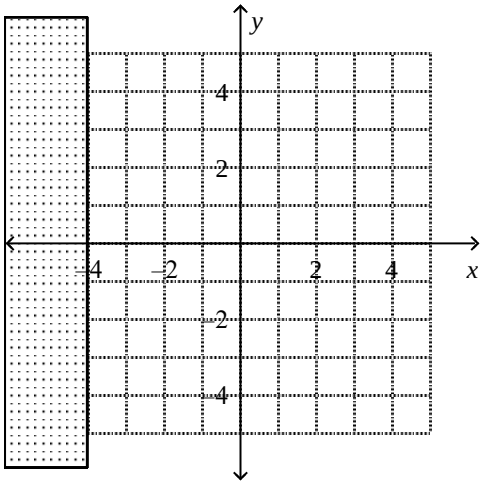
a. $x \leq -\frac{9}{5}$



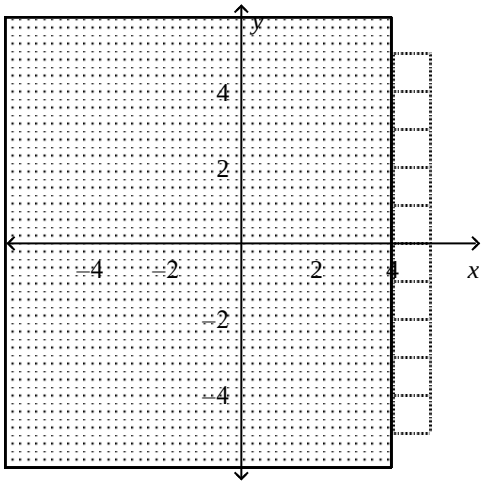
c. $x \leq \frac{9}{5}$



b. $x \leq -4$

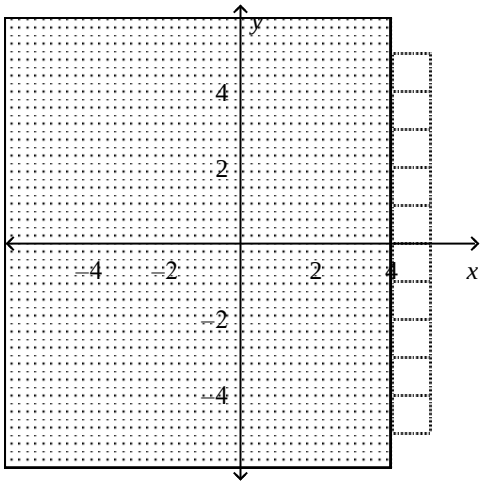


d. $x \leq 4$

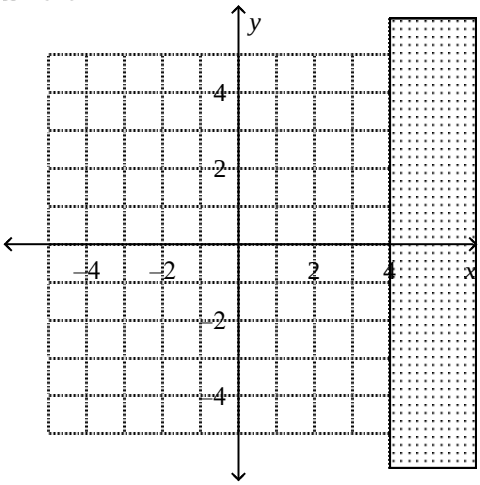


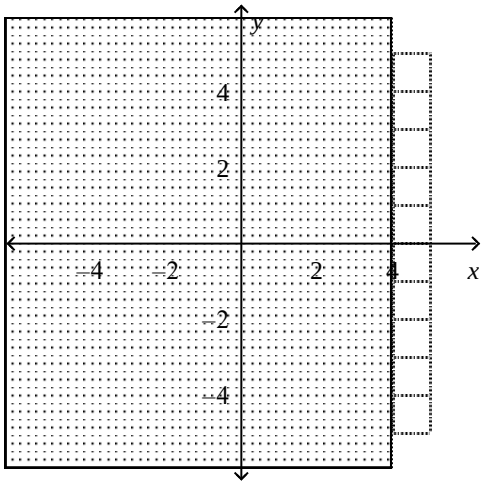
____ 51. Solve and graph $4x - 2 < 14$.

a. $x < 4$ c. $x > 4$

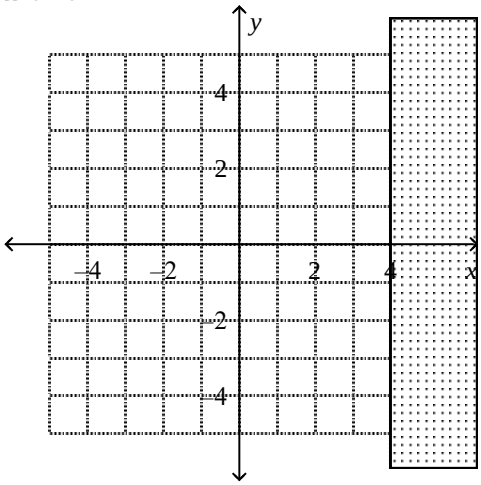


b. $x < 4$



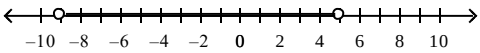


d. $x > 4$

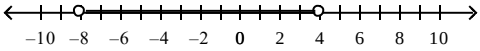


____ 52. Solve $|d + 2| \geq 6$. Graph the solutions.

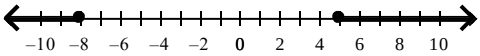
a. $-9 < d < 5$



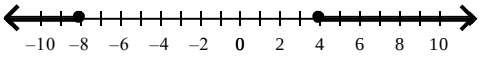
b. $-8 > d > 4$



c. $-8 < d < 5$

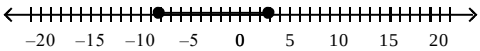


d. $d \leq -8$ or $d \geq 4$

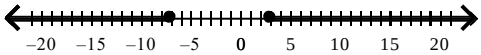


____ 53. Solve $|4x + 10| < 18$. Graph the solutions.

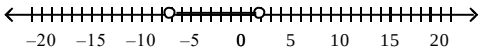
a. $-8 < x < 3$



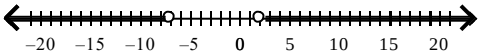
b. $-7 < x < 3$



c. $-7 < x < 2$

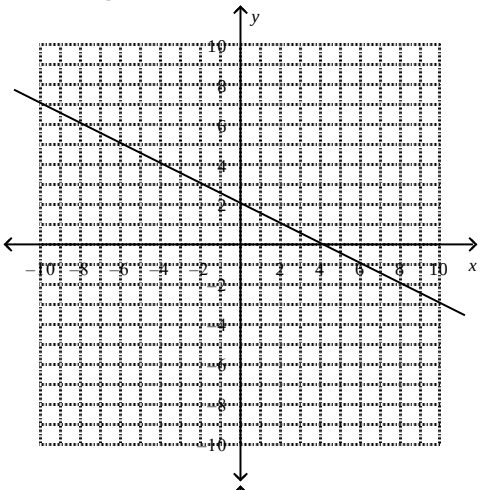


d. $-7 > x > 2$

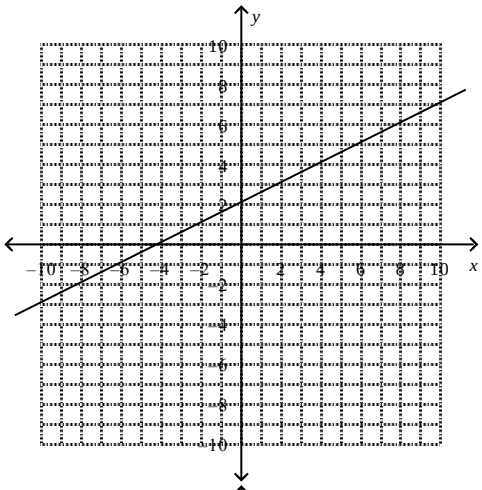


____ 54. Graph $2x - 4y = 8$.

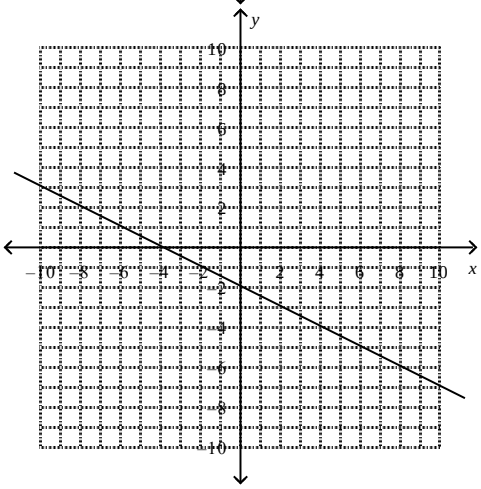
a.



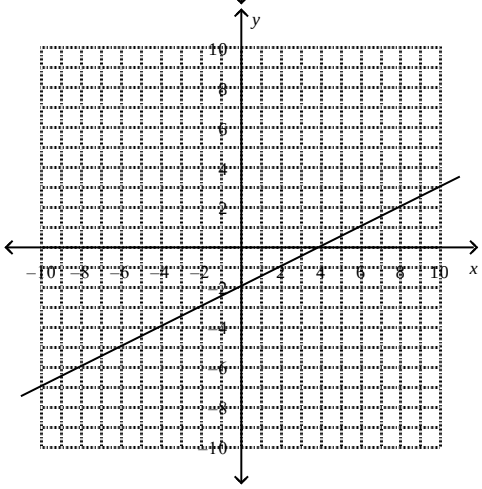
c.



b.

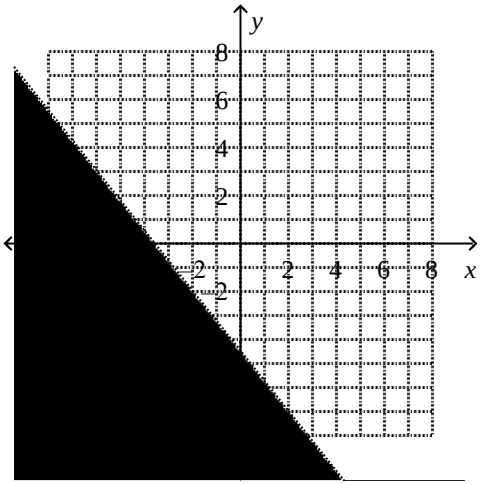


d.

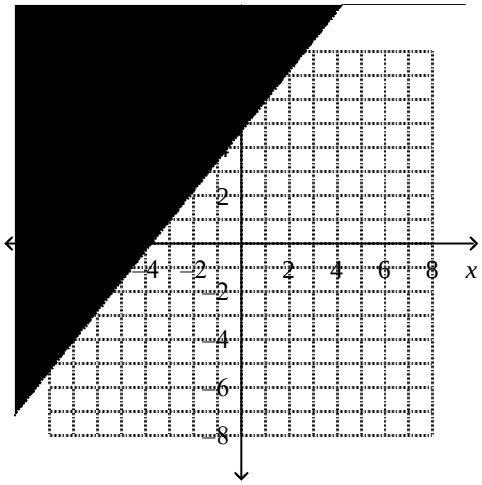


____ 55. Graph $5x + 4y > 18$.

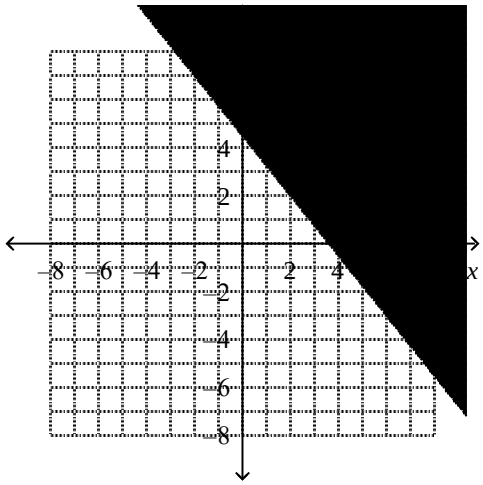
a.



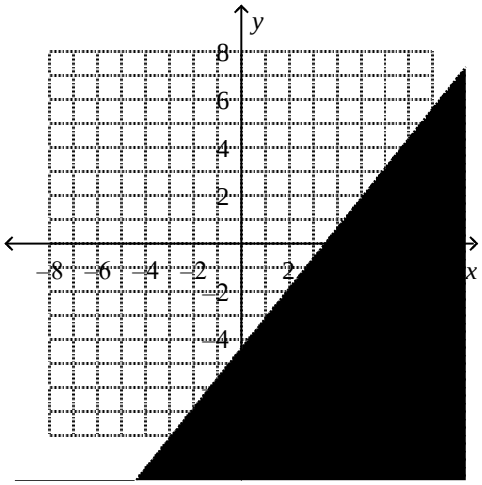
c.



b.



d.



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. $\dfrac{\left(8^3x^3y^4\right)^3}{\left(8^3x^3y^4\right)^2}$

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. $\dfrac{\left(xy^5\right)\left(x^5y\right)}{\left(x^8y\right)^3}$

a. $\dfrac{y^4}{x^{18}}$
b. $\dfrac{y^3}{x^{18}}$
c. $\dfrac{x^3}{y^{18}}$
d. $\dfrac{x^{18}}{y^3}$

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. $(3x + 2y)(5x + 2y)$
b. $(3x - 2y)(5x + 2y)$
c. $(3x + 2y)(5x - 2y)$
d. $(3x - 2y)(5x - 2y)$

Write the number in scientific notation.

____ 64. 48,000,000

a. 4.8×10^9
b. 4.8×10^8
c. 4.8×10^7
d. 48×10^6

____ 65. 0.0000234

a. 2.34×10^{-5}
b. 2.34×10^{-6}
c. 234×10^6
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
b. 1.059×10^{-1}; 0.1059
c. 2.6703×10^{-1}; 0.26703
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
b. 3.349×10^2; 334.9
c. 6.44×10^7; 644
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.

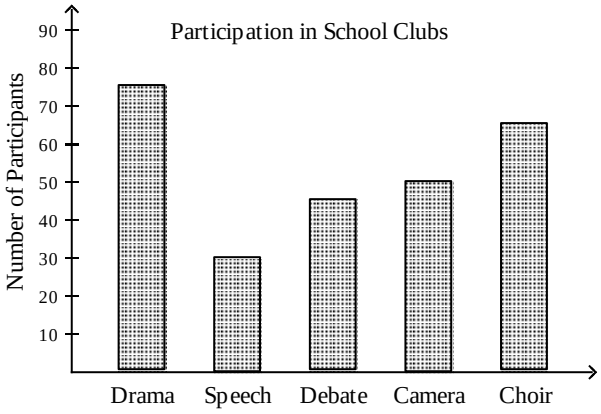
a. 13.625, 14, 18
b. 12.625, 14, 18
c. 13.625, 13, 18
d. 12.625, 13, 18

b. 5.4, 7.7, 9.3, 4.2, 7.1
d. 6.1, 7.5, 7.3, 8.8, 4.9

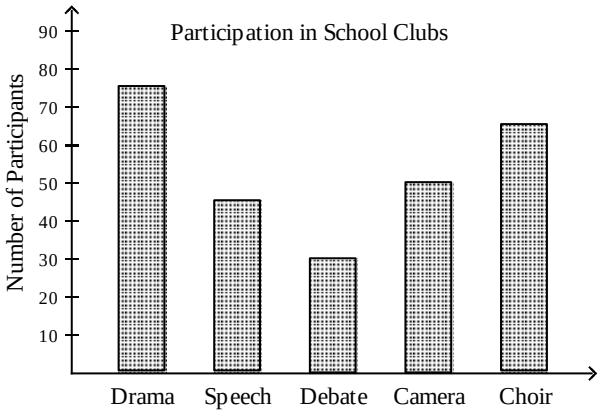
____ 72. Which of the following bar graphs shows the number of participants in various school clubs as listed below?

Drama	Speech	Debate	Camera	Choir
75	30	45	50	65

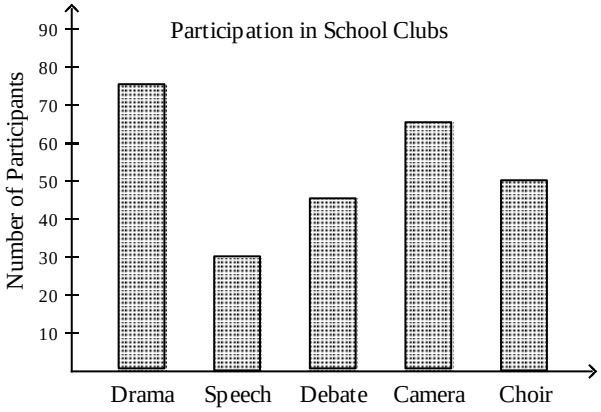
a.



b.



c.

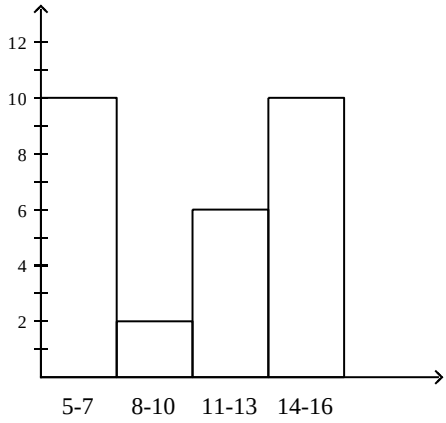


d. none of these

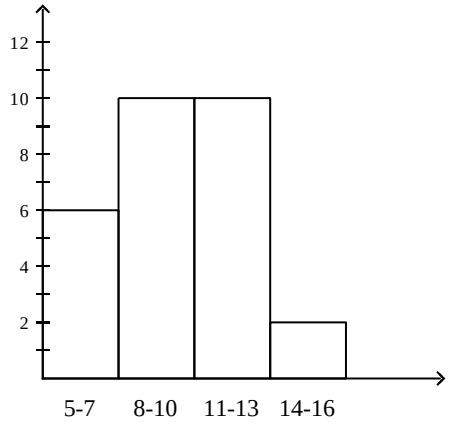
____ 73. Which histogram uses the data in the table below?

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

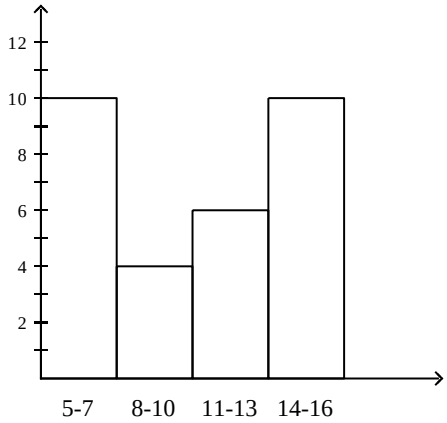
a.



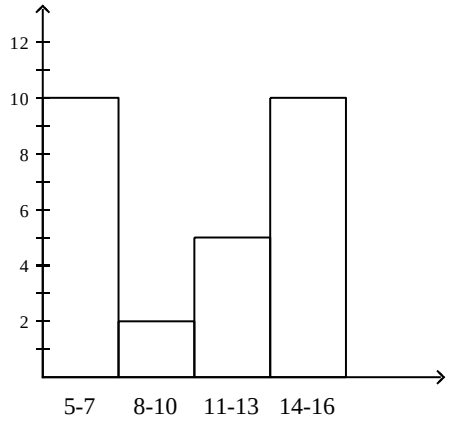
c.



b.



d.



____ 74. Which number is not written in scientific notation?

a. 2.6×10^{-2}

b. 3.689×10^{5}

c. 143.6×10^{-2}

d. 9.561×10^{2}