AIMS REVIEW

1. *Simplify* $-|8-12|+|-3|$

a) -17 (b) 1 c) 7 d) 1

$-|-4| + 3$
$-4 + 3 = -1$

• absolute value always positive
• absolute value is like parentheses

2. What is .000078 written in scientific notation? $7.8 \cdot 10^{-5}$ • number part < 10

a) 78×10^4 b) 78×10^{-4} • exponent = move decimal pt
c) 7.8×10^5 (d) 7.8×10^{-5}
• direction: neg. exp moves left

3. The algorithm below is a step-by-step geometric procedure. $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

I. Add the 1st x-coordinate value to the 2nd x-coordinate value and divide by two.

II. Add the 1st y-coordinate value to the 2nd y-coordinate value and divide by two.

III. Write your answers from step I and step II as an ordered pair.

Which of the following does the algorithm best represent?

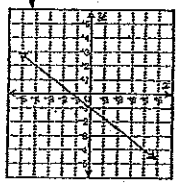
a) Calculating the slope of a line.
b) Calculating the y-intercept of a graph.
c) Calculating the length of a line segment.
(d) Calculating the midpoint of a line segment.

4. Which of the following is the graph of $y = \frac{3}{4}x - 1$?

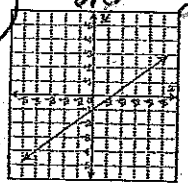
slope y-intercept

• / +slope \ - slope
• careful sign of y-int.
• slope = $\frac{\text{up}}{\text{over}} = \frac{\text{change in } y}{\text{change in } x}$

a)



(b)



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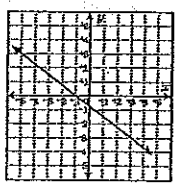
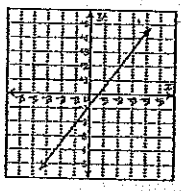


d)



5. Which of the following is the best estimate of $\sqrt{20}$?

a) 4 (b) 4.5 c) 5 d) 5.5

• try squaring nearby numbers

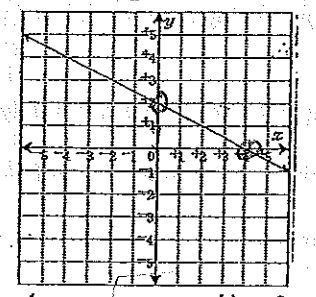
$4^2 = 16$ between 4 & 5
$5^2 = 25$

6. Find the algebraic expression that represents the sum of 12 and five times a number.

• sum = add
• times = multiply

(a) $12 + 5n$ b) $5(12 + n)$
c) $12 - 5n$ d) $(12 + 5)n$

7. What is the slope of the line shown?



• look for points at integer values
• slope = $\frac{\text{change in } y}{\text{change in } x}$
• start with left point

$\frac{-2}{4} = -\frac{1}{2}$

a) -4 b) -2
c) $\frac{1}{2}$ (d) $-\frac{1}{2}$

8. Simplify $(x-2)(x+9)$

• each part of one group multiplies each part of other group

a) $x^2 - 18$ b) $x^2 - 11x - 11$
(c) $x^2 + 7x - 18$ d) $x^2 - 7x + 18$

• FOIL

$x^2 + 9x - 2x - 18$
$x^2 + 7x - 18$

9. *Simplify* $(3m^2n)(5mn^5)$

• multiply each "type" together (numbers, ms, ns)

(a) $15m^3n^6$ b) $8m^3n^6$ • multiply – add exponents
c) $8m^2n^5$ d) $15m^2n^5$
• no exponent = exp is 1

$15m^3n^6$

10. *Simplify* $\sqrt{49a^4b^8c^6}$

• separate
• square root cuts exponent in half

a) $7abc$ b) $7a^2b^2c^3$
c) $7a^2b^4c$ (d) $7a^2b^4c^3$

$\sqrt{49}\sqrt{a^4}\sqrt{b^8}\sqrt{c^6} = 7a^2b^4c^3$

11. Solve: $3(6x - 7) = 6x - 30$

• distribute
• get all x's on one side
• simplify

$18x - 21 = 6x - 30$

a) $\frac{51}{12}$ b) $-\frac{4}{3}$

$12x = -9$, $x = \frac{-9}{12} = -\frac{3}{4}$

c) $-\frac{3}{4}$ d) $\frac{12}{51}$

12. What is the value of the expression below?

• PEMDAS

$27 - (9-6)^2 \cdot 3$

$27 - 3^2 \cdot 3 = 27 - 9 \cdot 3 = 0$

a) 54 b) 9

c) 0 d) -108

13. Which of these statements is true about the graphs of the equations below?

$y = 3x + 4$

$3y = 9x - 12$

$y = 3x - 4$

• solve for y so you can find slopes
• slopes:
  - neg. recip. ($\perp$)
  - equal ($\parallel$)
  - equal & y-int same coincide

a) The lines coincide

b) The lines are parallel

c) The lines are perpendicular

d) The lines intersect, but are not perpendicular

14. Solve $I = prt$ for p.

$p = \frac{I}{rt}$

a) $p = \frac{I}{rt}$ b) $p = \frac{Ir}{t}$

c) $p = \frac{It}{r}$ d) $p = Irt$

• get p by itself
• divide letters like numbers

15. Which of these equations represents a line passing through (3, 2) and (-6, -4)?

x, y

• for each point plug x in, you must get y out
• passes through if both pts on line

a) $y = \frac{3}{2}x$ b) $y = \frac{2}{3}x$

c) $y = 3x$ d) $y = 2x$

16. What is the length of the line segment that has endpoints at (-1, 1) and (2, 3)?

• dist. formula $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

a) $\sqrt{5}$ b) $\sqrt{13}$

c) $\sqrt{65}$ d) 5

$\sqrt{3^2 + 2^2}$

$\sqrt{9 + 4}$

$\sqrt{13}$

17. Which of these arguments is valid?

a) Figure ABCD is a rectangle, or figure ABCD is not a rectangle. Therefore, figure ABCD is a trapezoid.

b) All freshman take Algebra I. John is taking algebra I. Therefore, John is a freshman.

c) All rectangles are parallelograms. Figure ABCD is a parallelogram. Therefore, figure ABCD is a rectangle.

d) The teacher said students could not receive an A in the class unless they got an A on the final exam. Ashley received an A in the class. Therefore, Ashley got an A on the final exam.

• try logic statements $a \Rightarrow b$, $b \Rightarrow c$ then $a \Rightarrow c$
• contrapositives are true: $a \Rightarrow b$ & $\sim b \Rightarrow \sim a$
• try finding counterexamples

18. The statements below are out of order.

1. If a figure is a square, then it is a rhombus.
2. If a figure is a parallelogram, then it is a quadrilateral.
3. If a figure is a quadrilateral, then it is a polygon.
4. If a figure is a rhombus, then it is a parallelogram.

Which of the following lists the statements in the correct logical order?

a) 2, 4, 3, 1 b) 1, 4, 2, 3

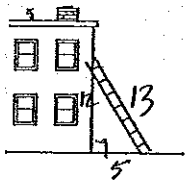
c) 3, 2, 1, 4 d) 4, 2, 3, 1

1, 4, 2, 3

• link statements using matching words

19. A ladder is leaning against the side of a building. The ladder is 5 feet away from the building and touches the building at a point 12 feet from the base. How long is the ladder?

• triples



a) 169 feet
b) 13 feet
c) 12 feet
d) 10 feet

20. Which of the following is an example of the use of a census?

a) All the students at XYZ High School are asked whether they ride the bus to school.

b) All the juniors in a government class are asked their opinion about changing the school mascot.

c) All the seniors are asked if they like calculus class.

d) All the girls in an algebra class are asked to participate in a survey.

• census = question for all

21. The length of a box is 16 cm, the width is 10 cm, and the height is 6 cm. What is the volume of the box?

• $V = lwh$

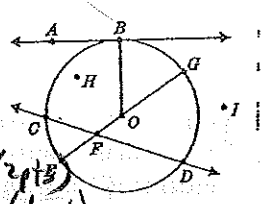
a) $76\,cm^3$
b) $224\,cm^3$
c) $960\,cm^3$
d) $632\,cm^3$

$V = lwh = 16 \cdot 10 \cdot 6 = 160 \cdot 6$

$\begin{array}{r} 160 \\ \times\ 6 \\ \hline 960 \end{array}$

22. Which of the following as a secant of circle O?

a) $\overline{AB}$
b) $\overline{EG}$
c) $\overline{OE}$
d) $\overline{CD}$



• secant = through a circle (2 pts)
• tangent = touches circle (1 pt)

23. Which of the following is true about the given set of data?

90, 75, 80, 60, 90

• median = middle value
• mode = most occurring value
• mean = add & divide by number of items
• range = max − min
• check mean last

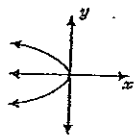
a) median is 75
b) mean is 79
c) mode is 80
d) the range is 20

90
90
80
75
60
395

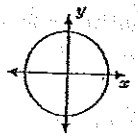
$5 \overline{)395}$ → 79, 35, 45

24. Which graph represents a function?

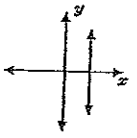
a)



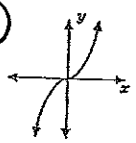
b)



c)



d)



• functions must have only 1 y for each x
• vertical line test

25. What could the length of the third side of a triangle x be if the other 2 sides are 3 and 5.

a) $0 < x < 10$
b) $x = 4$
c) $2 < x < 8$
d) $2 \le x \le 8$

• smallest 2 sides added must be > longest side

26. At Norwood High School, a student is assigned to a gym class based on the following information.

• multiply choices

Days: M, W, or F
Sessions: Morning, Noon, or Afternoon
Places: Gym A or Gym B

$3 \cdot 3 \cdot 2 = 18$

How many different outcomes for choosing a gym class are there?

a) 8
b) 15
c) 18
d) 25

27. In the equation below, what is the value of y when x = -2?

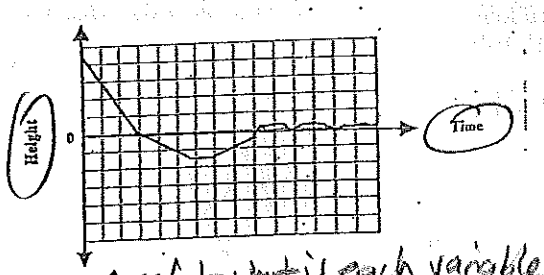
$y = -6x^2 + 12x + 3$

$y = -6(-2)^2 + 12(-2) + 3$

a) 3
b) 123
c) - 171
d) -45

$y = -6(4) - 24 + 3$
$y = -24 - 24 + 3$ • plug it in
$y = -48 + 3$
$y = -45$

28. The graph depicts a real-world situation. Which of the following situations could it depict?



• careful—what is each variable?

a) A person dove into the water. — only one that could have negative height
b) A person jumped from a tree to the grass below.
c) A plane landed safely.
d) A plane crashed into the driveway.

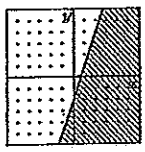
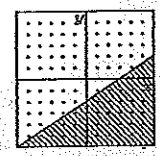
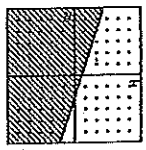
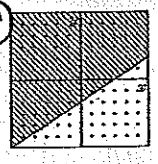
29. Lincoln High School is considering adding co-ed soccer to the sports program for the fall season. In order to get an unbiased sample of interest in soccer, the school should survey which group below?

a) all the girls in dance class
b) the varsity football team
c) all students who were elected this year to the student council.
d) every 3rd student entering second period class.

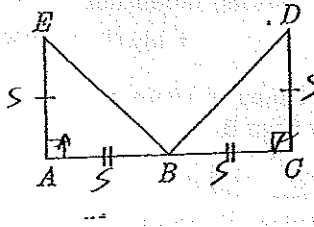
• 'unbiased' = equal from all groups

30. Which of these graphs correctly represents the graph of $y \geq \frac{2}{3}x - 2$?

• graph the line
• find y intercept
• shade above if >
• dotted line if > not ≥

a)

b)

c)

d)


31. Which theorem can be used to prove the triangles in the figure below are congruent?



• must be 'in a row'
• mark on diagram
• must match same on both triangles

a) SSS
b) SAS
c) ASA
d) AAS

32. Which of the following transformations produces a figure similar but not congruent to the original one?

= bigger or smaller

a) A transformation that adds 2 to the x-coordinate and subtracts 2 from the y-coordinate of the vertices of a triangle. — translate

b) A transformation that adds 2 to the x-coordinate and multiplies by 2 the y-coordinate of the vertices of a triangle. — distort

c) A transformation that multiplies by 2 the x and y coordinates of the vertices of a triangle.

d) A transformation that adds 2 to the x-coordinate and divides by 2 the y-coordinate of the vertices of a triangle. — distort

• Similar = grow or shrink
• x & y of all points affected equally
• multiply or divide (grow) (shrink)

33. Aaron used the Pythagorean theorem to find the height of a tree. He calculated that the tree was $\sqrt{225}$ feet tall. Which of the following should be used to write the height of the tree?

15
15
225
15
2 15

a) ± 15 *feet* b) -15 *feet*

c) 15 *feet* d) 15^2 *feet*

• can't have negative height of tree
• 15 is square root of 225.

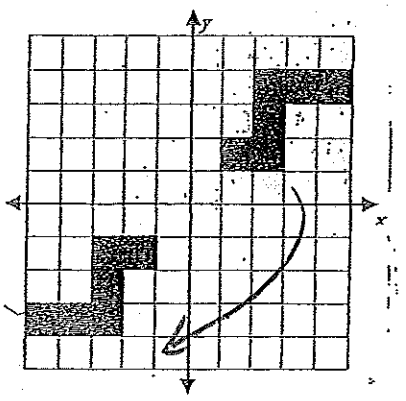
34. A cube numbered 1 through 6 is tossed once. What is the probability that a number less than 4 shows on the top face of the cube? 1 2 3 4 5 6

• $P = \frac{\text{desired}}{\text{total}}$ $\frac{3}{6} = \frac{1}{2}$
• write out all outcomes count how many are desired

a) 1 b) $\frac{2}{3}$

c) $\frac{1}{2}$ d) $\frac{1}{3}$

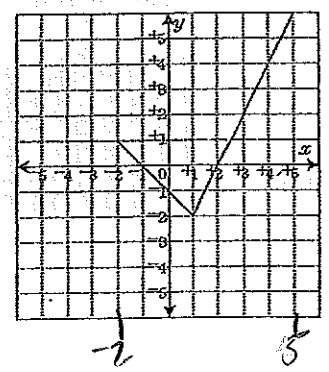
35. Which type of transformation is represented by the figures in the graph?



a) reflection and translation b) reflection

c) rotation d) dilation and rotation

36. What is the domain of the graphed relation?



• domain = x
range = y
• closed • $\leq$
open $<$

−2 5

a) $-2 \leq y \leq 6$ b) $-2 \leq x \leq 6$

c) $-2 \leq x \leq 5$ d) $-2 \leq y \leq 5$

37. Solve: $5 - 7x = -4(2x-3)$

• distribute
• get x by itself on one side

$5 - 7x = -8x + 12$

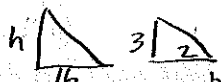
$5 + x = 12$

$x = 7$

a) 7 b) −8

c) 13 d) 17

38. A tree casts a 16 ft shadow at the same time of day that a 3 ft vertical stick casts a 2 ft shadow. How tall is the tree?



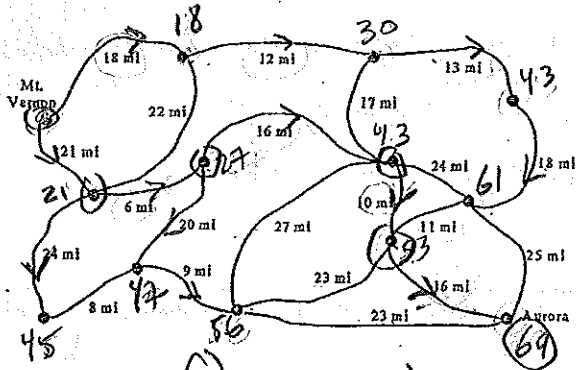
• draw picture
• make ratios
• any direction be consistent

a) 21 ft b) 12 ft

c) 24 ft $\frac{h}{3} = \frac{16}{2}$ $2h = 3 \cdot 16$ $h = 3 \cdot 8$ d) 27 ft

39. Find the shortest route from Mt. Vernon to Aurora.

• find shortest dist.
• add shortest dist. to it
• repeat

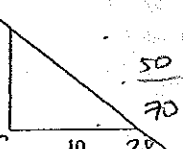


a) 73 b) 69 c) 86 d) 58

Dijkstra's algorithm
– start at smallest node
– add for smallest outgoing – write total on new node and add arrow showing path
repeat with new smallest node

40. An architect is requiring the pitch of a roof to be at least 7 on 10 on a new house he is building, as shown in the figure below.

• cross multiply
• compare slope
• use common denom.



slope $= \frac{7}{10}$

$\frac{50}{70} \; \frac{35}{7} > \frac{7}{10} \; \frac{49}{70}$ steeper

$\frac{28}{30} \; \frac{14}{15} > \frac{7}{10} \; \frac{21}{30}$ steeper

$\frac{6}{10} \; \frac{3}{5} < \frac{7}{10}$ less steep

Which of the following roofs is not steep enough?

a) A roof with a pitch of 5 on 7. $\frac{5}{7}$

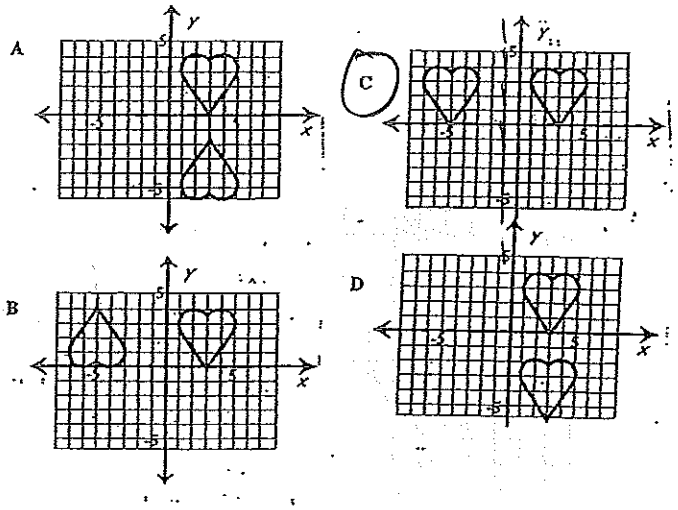
b) A roof with a pitch of 14 on 15. $\frac{14}{15}$

c) A roof with a pitch of 3 on 5. $\frac{3}{5}$

d) A roof with a pitch of 7 on 9. $\frac{7}{9}$

41. Which of the following graphs represents a reflection of the figure about the line x = -1?

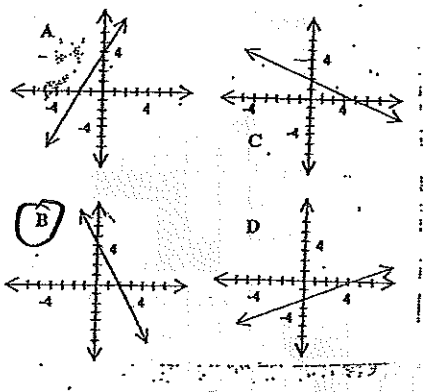
- X = number = vertical line
- y = number = horiz. line
- reflect = mirror at the line



42. Which of the following lines passes through the points in the table?

x	y
0	4
2	0
3	-2

- plug in x, should get y on the line
- try all points given



43. Which of the following is equivalent to the expression $3(2x - 4y) + 4x + 6y$? $6x - 12y + 4x + 6y$

$10x - 6y$

a) $10x + 2y$
b) $9x - 18y$
c) $10x + 18y$
d) $10x - 6y$

- distribute and combine like terms

44. Which of these is the correct equation for the line that crosses the x- axis at (2 , 0) and the y-axis at (0 , 6)?

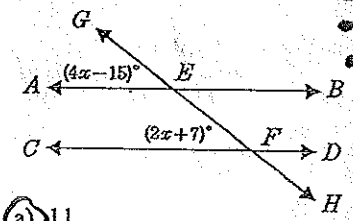
a) $y = 3x - 6$
b) $y = 2x - 4$
c) $y = -3x + 6$
d) $y = -2x + 5$

- plug in x, check if y matches — both pts

45.

In the accompanying diagram, parallel lines $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ intersect transversal $\overleftrightarrow{GH}$ at points E and F, respectively. If $m\angle AEG = 4x - 15$ and $m\angle CFE = 2x + 7$, find the value of x.

- Corr. $\angle$s $\cong$
- alt int $\angle$s $\cong$
- same side $\angle$s to 180°



$4x - 15 = 2x + 7$

$2x = 22$

$x = 11$

a) 11
b) 32. 6
c) -4
d) 3.7

46. If an angle's measure is between 0° and 90°, then it is an acute angle. Jenny measured the angle made be two walls in her home and found the angle to be 84°. Which of the following conclusions is most reasonable?

a) Jenny needs to measure another angle.
b) The angle is a right angle.
c) The angle is an obtuse angle.
d) The angle is an acute angle.

- answer is in the problem

47. Which of these could NOT be classified as the number of animals at the zoo?

a) Rational number
b) Integers
c) Whole numbers
d) Irrational numbers

- only one that has no integers

48. Which of the following sets of numbers is not infinite?

a) {*natural numbers less than 8*} ← 'counting #s' starts at 1
b) {*odd integers less than 8*}
c) {*rational numbers less than 8*}
d) {*real numbers less than 8*}

} include negatives so infinite

49. Find the values of x for which the inequality is true.

$$3x+\frac{4}{5}\le -2x-\frac{3}{5}$$

• add/sub OKAY
• mult/div by neg change < to > direction

$5x \le -\frac{7}{5}$ $x \le \frac{-7}{25}$

a) $x \le \frac{-7}{25}$ b) $x \le \frac{-7}{5}$

c) $x \le \frac{1}{5}$ d) $x \le \frac{1}{5}$

50. *Simplify* $4x(x^2-4xy+6y^2)$

$4y^3-16x^2y+24xy^2$

• distribute
• mult numbers
• when x's or y's mult, add exponents

a) $4x^3-4x^2y+24xy^2$

b) $4x^3-16x^2y-24xy^2$

c) $4x^3-16xy+24xy^2$

d) $4x^3-16x^2y+24xy^2$

51. Jamal calculated that it costs \$0.35 per mile and \$4.25 per day to operate his car. If Jamal drives *m* miles over *d* days, which equation below expresses the cost, C, of driving the car, in terms of *m* and *d*?

• each part multiply cost × number of this,

a) $C = \$4.25d + \$0.35m$ b) $C = \$0.35d + \$4.25m$

c) $C = \$3.50d + \$4.25m$ d) $C = \$4.25d + \$3.50m$

52. How many different ways can six different plants be arranged side by side on a shelf?

6! 6 4 3 2 1 = 720

a) 720 b) 6

c) 36 d) 5,040

53. *Solve:* $\frac{(x+5)}{8}=\frac{(x-1)}{4}$

• cross multiply
• get x by itself on one side
• use parentheses!

$4x+20=8x-8$

$28=4x$ $x=7$

a) $1\frac{1}{2}$ b) 3

c) $3\frac{1}{4}$ d)

54. What is the rule to determine the next term in the following sequence?

$-\frac{7}{4}, -\frac{10}{4}, -\frac{13}{4}, -\frac{16}{4}, -\frac{19}{4}$ $+\frac{3}{4}$

a) *Add the previous two terms.*

b) *Multiply the last term by* $-\frac{3}{4}$.

c) *Add* $-\frac{3}{4}$ *to the last term.*

d) *Multiply the previous two terms.*

55. Eight friends went out to dinner together before prom. The restaurant adds a gratuity (tip) of 15 % to the total for groups of 8 or more. The cost of the meals was \$270.40, including tax. Which amount is closest to the total cost of dinner, including the gratuity.

a) \$325 b) \$311

c) \$284 d) \$41

• add gratuity
• % → decimal (move 2 places left)

15% = .15

270.40
40.56
310.96

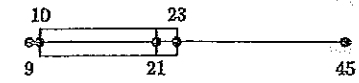
270.40
.15
135200
27040
40.5600

56. Draw a box-and-whisker plot for the set of data 9, 10, 12, 14, 21, 23, 25, 31, 34, 43, 45.

Q1 m Q3

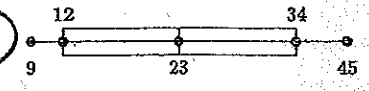
• min, 1st quartile, median, 3rd quartile, max
• median is middle value
• quartiles 1/4 values
• in between quartiles are middle values

a)

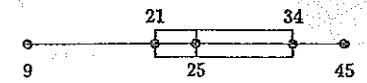


b)

c)



d)



57. Matt drove for 4 hours from his home to his friend's house. He averaged between 65 and 85 miles per hour. Which of the following is a reasonable total distance that he drove on this trip?

• multiply
• use avg value for speed

a) 300 b) 260

c) 340 d) 360

75 miles / 1 hr · 4 hr = 300 miles

58. Under which transformation will the image be a different size than the original figure?

a) reflection b) translation

c) rotation d) dilation = grow

59. Which of the following linear equations is derived from the table of values below?

x	y
-3	8
0	4
3	0

• look at zero x=0 = y-intercept
• double check other value (plug in x, match y)

a) $y=-\frac{3}{4}x+3$ b) $y=-\frac{3}{4}x-3$

c) $y=-\frac{4}{3}x+4$ d) $y=-\frac{4}{3}x-4$

60. Each of the events below is performed randomly. Which includes a dependent event?

a) A card is drawn from a deck of playing cards, replaced in the deck, and a second card is drawn from the deck.

b) A spinner with 8 congruent sectors is spun, the number is marked, and the spinner is spun again.

c) A fair coin is flipped, the side it landed on is marked, and the coin is flipped again.

d) Twenty differently numbered tiles are put into a bag. One tile is drawn, the number is marked, the tile is set aside, and a second tile is drawn.

61. Mrs. Herrera started a sequence of numbers by adding the first three terms to get the fourth term. Her first three terms were 3, 5, and 8, which gave 16 as the fourth term. To get each new term she added the three preceding terms. The first 5 terms of her sequence are below.

3, 5, 8, 16, 29, 53, 98

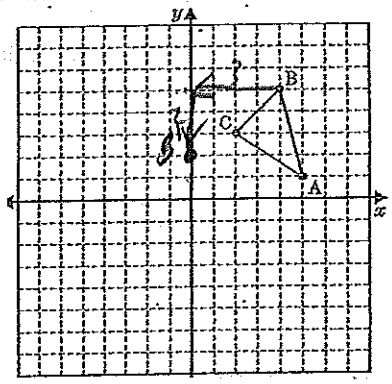
2 29 16 8 53 29 16 98

What would be the 7th term in the sequence?

a) 45 b) 53
c) 98 d) 106

• read problem carefully
• continue pattern

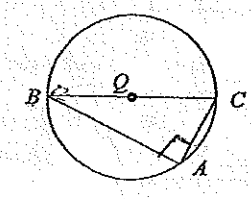
62. What are the coordinates of B when the triangle is translated 4 units left and 3 units down?



• start at given pt
• move w/ instructions
• read coordinates where you end up.

a) (4, 5) b) (0, 5)
c) (4, 2) d) (0, 2)

63. The points A,B, and C lie on circle Q below, in which $\overline{BC}$ is a diameter.

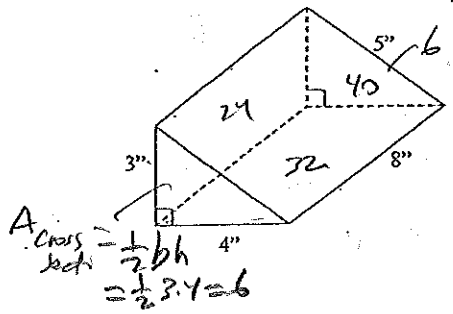


• ∠ = ½ arc (vertex on circle)
• arc for dia = 180°
or
• inscribed angle for dia = ½ ∠

In circle Q, what is the measure of ∠CAB?

a) 360° b) 180°
c) 90° d) 60°

64. What is the surface area of the triangular prism represented below in square inches?



$A_{cross\ sect} = \frac{1}{2}bh = \frac{1}{2}\cdot 3\cdot 4 = 6$

• Find area of each side and add

40
32
24
6
6
108

a) 120 sq. in. b) 108 sq. in.
c) 96 sq. in. d) 48 sq. in.

65. Solve $\sqrt{x+9}=4$ $x+9=16$ $x=7$

a) -7 b) -5
c) 5 d) 7

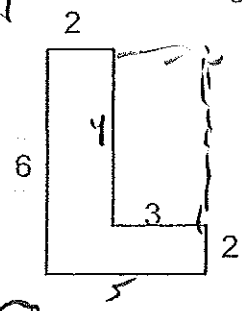
• square both sides

66. Solve $|x+3|=8$ • split into +/− cases

a) -6, -1 b) 5, -11
c) 6, -1 d) 6, 1

$x+3=8$ $x=5$ $x+3=-8$ $x=-11$

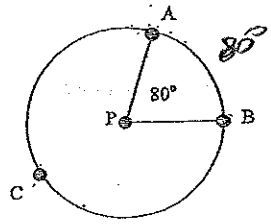
67. Find the area of the figure.



• big rect - 2 pieces
• subtract to find missing lengths
36 − 12 = 18

(a) 18 sq. units
b) 22 sq. units
c) 36 sq. units
d) 17 sq. units

68. Points A, B, and C are on circle P.



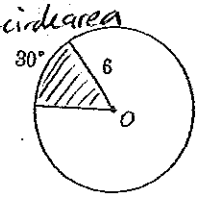
What is the m $\overset{\frown}{ACB}$?

360 − 80 = 280
• vertex center, angle = arc
• big arc (3 letters) = 360 − little arc

(a) 280°
b) 220°
c) 160°
d) 80°

69. The area of a sector of the circle with an arc measure of 30° and with radius of 6 is _____.

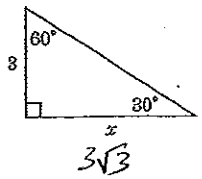
• fraction of whole circle area



$\left(\frac{30}{360}\right)(\pi 6^2)$
$\frac{1}{12}\ 36\pi$
$= 3\pi$

(a) 3π
b) 9π
c) 12π
d) 3

70. Determine the length of side x in the diagram.



$3\sqrt{3}$

• 30-60 Δ pattern
x, 2x, x√3
(45-45 pattern
x, x, x√2)

a) 6
b) $\sqrt{3}$
c) $\frac{\sqrt{3}}{2}$
(d) $3\sqrt{3}$

71. Find the value of y in the system of equations.

$2x + y = 5$
$3x - y = 5$
$5x = 10$
$x = 2$

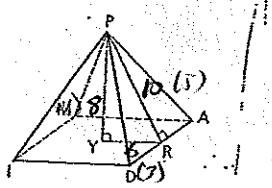
$2(2) + y = 5$
$4 + y = 5$
$y = 1$

• elimination
get one term to cancel when you add equations together

(a) 1
b) 3
c) 5
d) 2

72. PIDAM is a regular square pyramid with $\overline{PY} = 8$ and $\overline{YR} = 6$. Find the slant height $\overline{PR}$.

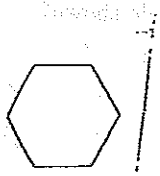
• triples



(a) 10
b) 5
c) 14
d) 2

73. Find the sum of the measures of the interior angles of a hexagon?

• $S_i = (n-2)180$
sum interior
$(6-2)180$
$4 \cdot 180$
$720°$



a) 180°
b) 360°
c) 540°
(d) 720°

74. Which sentence illustrates the associative property for addition?

• associative ← like 'associate' who are you friends with

(a) $(a + b) + c = a + (b + c)$
b) $a(b + c) = ab + ac$ distributive prop.
c) $a + 0 = a$ identity property
d) $a + b = b + a$ commutative prop.

75. Which statement is the contrapositive of the following statement: "If you study hard, then you will pass the test."

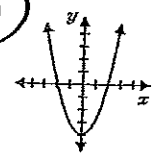
• converse = flip, • inverse = negate, • contrapositive both

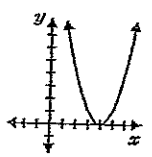
a) If you passed the test, then you studied hard.
b) If you don't study hard, then you will not pass the test.
(c) If you did not pass the test, then you did not study hard.
d) none of these

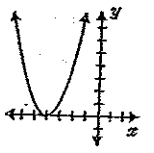
76. To find the total number of ways a committee of three can be chosen from a group of five people you would use: • order doesn't matter

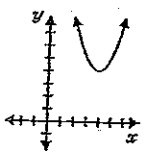
a) a permutation
(b) a combination
c) the quadratic formula
d) Pythagorean theorem

77. Which one of the following could be the graph of $y = x^2 - 4$?

a) 

b) 

c) 

d) 

• plug in 0 for x, y = -4 only 1 graph matches

78. If $A = \begin{bmatrix} 2 & -3 \\ 4 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 \\ -3 & 4 \end{bmatrix}$

Find $2A - B$

• multiply before add/sub
• add/sub corresponding elements

a) $\begin{bmatrix} 5 & 8 \\ 5 & 6 \end{bmatrix}$

b) $\begin{bmatrix} 4 & -8 \\ 5 & 6 \end{bmatrix}$

c) $\begin{bmatrix} 3 & 8 \\ 11 & -2 \end{bmatrix}$

d) $\begin{bmatrix} 3 & -8 \\ 11 & -2 \end{bmatrix}$

$\begin{bmatrix} 4 & -6 \\ 8 & 2 \end{bmatrix} - \begin{bmatrix} 1 & 2 \\ -3 & 4 \end{bmatrix} = \begin{bmatrix} 3 & -8 \\ 11 & -2 \end{bmatrix}$

79. What is the sum of the solutions for the quadratic equation below? (Factor)

$x^2 + 4x - 12 = 0$

$(x+6)(x-2)$

m: -12 | s: 4

6 -2

a) 13
b) 8
c) -1
d) -4

-6 + 2
-4

80. Which of the following represents a correct procedure for solving each given equation?

• look for mistakes

a) $-2(x-5) = -12$
$-2x - 10 = -12$
$-2x = -2$
$x = 1$

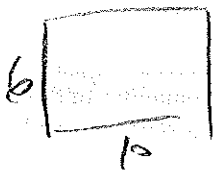
b) $8(x-5) = 24$
$8x - 40 = 24$
$8x = 16$
$x = 2$

c) $5 - 2x = 8x + 25$
$5 = -10x + 25$
$30 = 10x$
$3 = x$

d) $7x - 12 = -2x + 15$
$9x - 12 = 15$
$9x = 27$
$x = 3$

81. A 3 X 5 inch photograph is enlarged so that each side is doubled. What happens to the original area?

a) The area is 8 times as great.
b) The area is 4 times as great.
c) The area is doubled.
d) The area will remain the same.



60

$\frac{60}{15} = 4$

15

• draw it out
• find Areas
• divide Areas

82. Which equation can be used to find the value of x in the right triangle shown?

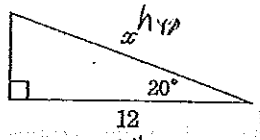
• mark opp, adj, hyp
• pick trig ratio/write it
• replace what you know

a) $\cos 20° = \frac{x}{12}$

b) $\sin 20° = \frac{12}{x}$

c) $\cos 20° = \frac{12}{x}$

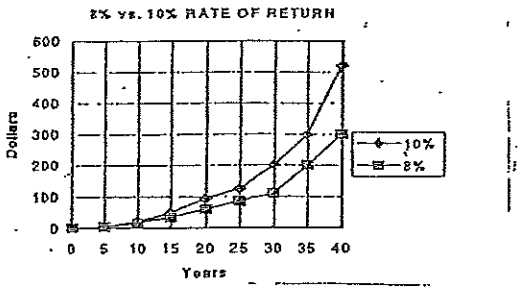
d) $\cos 70° = \frac{x}{12}$



$\cos 20° = \frac{12}{x}$

83. The graph below shows the results of investing $100 per month in accounts with two different rates of return. Based on this information, which statement below is true?

• eliminate ones that aren't true



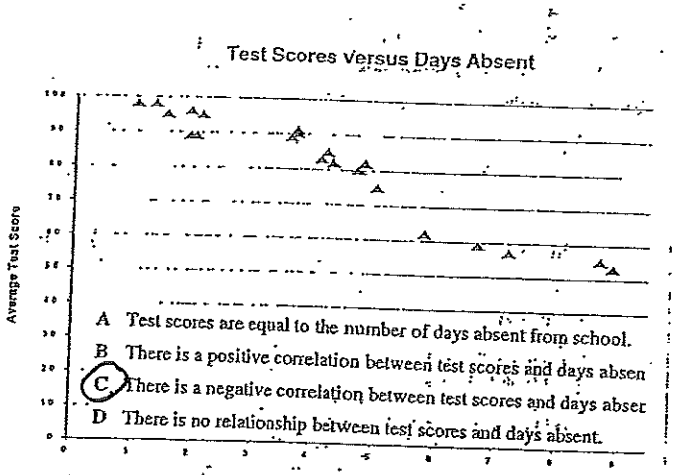
a) Investing $100 per month in an account that pays 10 % rather than 8 % will not make any difference until after 25 years.

b) A larger rate of return causes the account to grow rapidly at first but then the growth rate slows.

c) A small increase in the rate of return makes a significant difference in the growth of the account over 40 years.

d) If the graph was to continue to 100 years, the 8 % line would catch up to the 10 % line.

84. What is the relationship between average test scores and days absent from school shown in the plot below?



• 2 variables

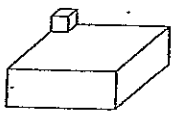
↑ ↑ same direction, positive correlation

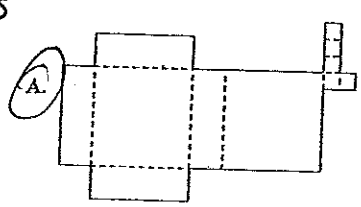
↑ ↓ opp dir, negative correlation

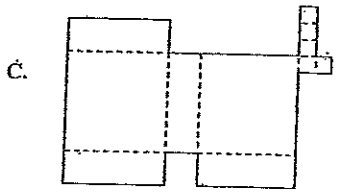
85. Which net below best represents the following object?

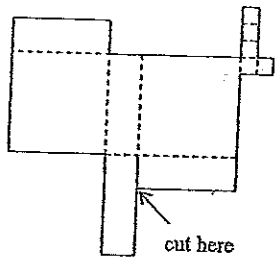
• visually 'fold' the net to make the shape

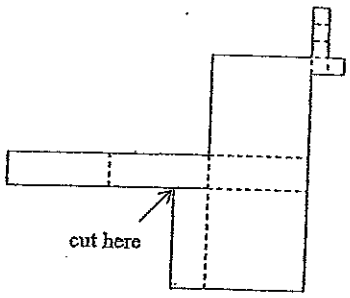
• start w/ big folds











An additional practice aims test is available on the Arizona department of education website.