INSTRUCTIONS

- Do not open this booklet until instructed to do so.
- Time limit: 20 minutes
- Mark your answer on the answer sheet by FILLING in the oval.
- You may use calculators.
- For pi, use the $\pi$ key or 3.14159 on your calculator.
- You may not use rulers, protractors, or other measurement devices on this test.
- Letter “E” is “None of the above” or “Not given”. It may be the correct answer to some of the problems.
- The figures are not to scale.

<table>
<thead>
<tr>
<th>Area Formulas:</th>
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<tbody>
<tr>
<td>Triangle</td>
<td>$A = \frac{bh}{2}$</td>
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<tr>
<td>Parallelogram</td>
<td>$A = bh$</td>
</tr>
<tr>
<td>Trapezoid</td>
<td>$A = \frac{h(b_1 + b_2)}{2}$</td>
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<th>Volume Formulas:</th>
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<td>Rect. Prism</td>
<td>$V = lwh$</td>
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<tr>
<td>Cylinder</td>
<td>$V = \pi r^2 h$</td>
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Student Name _____________________________  Student Number ______

School ________________________________
51) Which of the following approximate measurements is least likely to be reasonable?
   A) An American football field is approximately 100 meters.
   B) A doorknob is placed on a door approximately 1 meter from the floor.
   C) An average sixth grader is approximately 200 cm tall.
   D) A paper clip is approximately 2 cm in length.
   E) None of the above

52) What is the best estimate for the capacity of a teaspoon?
   A) 5 milliliters         B) 1 liter         C) 500 milliliters          D) 0.5 liters         E) Not given

53) What is the best estimate for the mass of a bowling ball?
   A) 200 grams         B) 7 kilograms         C) 70 kilograms         D) 500 grams         E) Not given

54) Given the approximate measure of 1 inch being equal to 2.54 cm, convert 100 cm into inches.
   A) 254 inches         B) 39.4 inches         C) 42.1 inches         D) 25.4 inches         E) Not given

55) Name a line that intersects with Plane T.
   A) GF        B) HJ        C) JF        D) line l        E) None of the above

56) Name the intersection of Plane S and Plane T
   A) GF        B) HJ        C) JH        D) line m        E) None of the above

57) Last season, Graham Zusi made a goal in almost every Sporting KC soccer game. The new season is beginning, so Zusi will make a goal in every game.

   A) Inductive                  B) Deductive

58) Matt Besler graduated from BV West. He played soccer at Notre Dame before getting selected in the 2009 draft to play for Sporting KC Soccer Club. This year Matt will play for Sporting KC.

   A) Inductive                  B) Deductive
Use the coordinate graph below for problems 59 and 60.

59) What is the slope of the line shown?
   A) 1     B) 1/3     C) −3/1     D) 3/1
   E) None of the above

60) What is the slope of a line perpendicular to the line segment shown?
   A) −1/3     B) 1/3     C) −3     D) 3
   E) None of the above

61) What is the linear equation for the line?
   A) \( y = \frac{-3}{2}x + 2 \)     B) \( y = \frac{-4}{3}x + 2 \)
   C) \( y = \frac{-3}{4}x + 2 \)     D) \( y = \frac{-2}{3}x + 2 \)
   E) None of the above

62) What is the linear equation for the line?
   A) \( y = 0 \)     B) \( x = 1 \)
   C) \( y = 1 \)     D) \( y = -1x + 1 \)
   E) None of the above

63) How many squares would be in the 10th figure?
   A) 28     B) 55     C) 66     D) 36
   D) None of the above

64) Find the value of \( x \):
   A) \( x = 20 \)     B) \( x = 50 \)     C) \( x = 60 \)
   D) \( x = 10.3 \)     E) None of the above
65) What is the perimeter of the rectangle?
   A) 15 units   B) 8 units   C) 24 units
   D) 20 units   E) None of the above

66) What is the area of the triangle?
   A) 15 units$^2$   B) 12 units$^2$   C) 24 units$^2$
   D) 20 units$^2$   E) None of the above

67) What is the ratio of the area of the triangle to the
   area of the rectangle?
   A) 5:4   B) 8:5   C) 5:6
   D) 4:5   E) None of the above

68) What is the area of the parallelogram?
   A) 25 sq. units   B) $5\sqrt{17}$ sq. units
   C) 20 sq. units   D) 24 sq. units
   E) None of the above

69) Reflect the square over the x axis. What are the
   new coordinates?
   A) A'(2,-2), B'(5,-2), C'(5,-6), D'(2,-6)
   B) A'(-2, 2), B'(-6, 2), C'(-6, 5), D'(-2,5)
   C) A'(-2,-2), B'(-5,-2), C'(-5,-5), D'(-2,-5)
   D) A'(2,-2), B'(5,-2), C'(5,-5), D'(2,-5)
   E) None of the above
70) Perimeter = 34  Find x.

\[ x + 2 + 2x + 7 + 5x + 1 = 34 \]

A) 2.25  
B) 3  
C) 2.5  
D) 4  
E) None of the above

71) Find x.

\[ \frac{5x}{(5x)^9} = \frac{102}{x} \]

A) 2.25  
B) 3  
C) 2.5  
D) 4  
E) None of the above

72) Solve the proportion:

\[ \frac{2x+5}{3} = \frac{3}{5} \]

A) -0.5  
B) -2  
C) -1.6  
D) 0.4  
E) None of the above

73) Use the similar triangles to find x:

\[ \frac{10}{x} = \frac{6}{12} \]

A) 14  
B) 15  
C) 16  
D) 17  
E) None of the above

74) Volume Formulas:

**Rectangular Prism:** \( V = l \times w \times h \)

**Cylinder:** \( V = \pi r^2 h \)

Find the volume of each figure. Round your answers to the nearest hundredth, if necessary.

A) 189 m\(^3\)  
B) 150 m\(^3\)  
C) 128 m\(^3\)  
D) 147 m\(^3\)  
E) None of the above

75) \[ V = \pi r^2 h \]

A) 1557.26 yd\(^3\)  
B) 4523.89 yd\(^3\)  
C) 639.78 yd\(^3\)  
D) 1130.97 yd\(^3\)  
E) None of the above

76) Given the rectangular solid below, what type of line segments are \( EH \) and \( DH \)?

A) Perpendicular  
B) Parallel  
C) Skew  
D) Vertical  
E) None of the above
Which sketch of a solid matches the net?

77) [Sketches A, B, C, D]

78) [Net with dimensions 17, 12, 17, 12]

79) Find the area of the trapezoid.

A) 24 sq. units  B) 24.5 sq. units  C) 32 sq. units  D) 26 sq. units  E) None of the above

80) A triangle has a perimeter 13. The two shorter sides have integer lengths equal to x and x + 1. What could be the lengths of the three sides of the triangle?

A) 1, 6, 6  B) 3, 4, 6  C) 5, 6, 2  D) 4, 5, 3  E) None of the above

Use the figure for problems 81 and 82.

81) Find the perimeter.

A) 13 cm  B) 14 cm  C) 17 cm  D) 18 cm  E) None of the above

82) Find the area.

A) 10 cm²  B) 24 cm²  C) 18 cm²  D) 22 cm²  E) None of the above
83) Each segment is perpendicular to the adjacent segment. If each line segment is 1 unit in length, what is the area of the figure?

A) 32 sq. units   B) 25 sq. units
C) 26 sq. units   D) 31 sq. units
E) None of the above

Find the missing measurement. Round your answer to the nearest tenth.

84) Area = 21 km²

A) 4.7 km   B) 7 km
C) 5.3 km   D) 6.1 km

85) Area = 5.3 in²

A) 2.4 in   B) 3 in
C) 3.2 in   D) 2.2 in

86) If you ride in a 1-mile race on your bicycle with 26” diameter wheels, what is the best estimate of how many times one tire will rotate during the race? Round to the nearest whole number. 1 mile = 5,280 ft.

A) 776 rotations   B) 119 rotations   C) 1551 rotations   D) 65 rotations   E) None of the above

Use the “aluminum cans recycling project” approximate measures for problems 87-90. Approximate measures:

- one can weighs 20 grams
- height is 12.5 cm
- diameter is 6.4 cm

87) What is the circumference of one can using d = 6.4 cm

A) 10.1 cm   B) 20.1 cm   C) 40.2 cm   D) 32.2 cm   E) Not given

88) What is the surface area of a single can if the formula is: \[ SA = Ch + 2B = \pi dh + 2\pi r^2 \]

A) 315.6 cm²   B) 508.6 cm²   C) 760.0 cm²   D) 261.4 cm²   E) Not given

89) If the surface area of a can has a weight of 20 grams, what is the weight of aluminum per sq. cm?

A) 0.026 grams/sq. in.   B) 0.039 grams/sq. in.   C) 0.063 grams/sq. in.
D) 0.077 grams/sq. in.   E) None of the above

90) If each can weighs 20 grams and 105,800 cans are recycled every minute, how many kilograms are recycled every minute?

A) 2,116,000 kg   B) 21,160 kg   C) 211.6 kg   D) 2,116 kg   E) Not given

http://www.cancentral.com/recycling-sustainability/facts
Shade the correct answer!
Example: A ● C D E

Name______________________
School _____________________

51.  A  B  C  D  E  71.  A  B  C  D  E
52.  A  B  C  D  E  72.  A  B  C  D  E
53.  A  B  C  D  E  73.  A  B  C  D  E
54.  A  B  C  D  E  74.  A  B  C  D  E
55.  A  B  C  D  E  75.  A  B  C  D  E
56.  A  B  C  D  E  76.  A  B  C  D  E
57.  A  B  C  D  E  77.  A  B  C  D  E
58.  A  B  C  D  E  78.  A  B  C  D  E
59.  A  B  C  D  E  79.  A  B  C  D  E
60.  A  B  C  D  E  80.  A  B  C  D  E
61.  A  B  C  D  E  81.  A  B  C  D  E
62.  A  B  C  D  E  82.  A  B  C  D  E
63.  A  B  C  D  E  83.  A  B  C  D  E
64.  A  B  C  D  E  84.  A  B  C  D  E
65.  A  B  C  D  E  85.  A  B  C  D  E
66.  A  B  C  D  E  86.  A  B  C  D  E
67.  A  B  C  D  E  87.  A  B  C  D  E
68.  A  B  C  D  E  88.  A  B  C  D  E
69.  A  B  C  D  E  89.  A  B  C  D  E
70.  A  B  C  D  E  90.  A  B  C  D  E
Shade the correct answer!
Example:   A  ●  C  D  E

Name______________________
School _____________________

ANSWER KEY - 3-26-15 cvb

51.  A  B  ●  D  E
52.  ●  B  C  D  E
53.  A  ●  C  D  E
54.  A  ●  C  D  E
55.  A  ●  C  D  E
56.  ●  B  C  D  E
57.  ●  B  C  D  E
58.  A  ●  C  D  E
59.  A  B  C  ●  E
60.  ●  B  C  D  E
61.  A  ●  C  D  E
62.  A  B  ●  D  E
63.  A  ●  C  D  E
64.  ●  B  C  D  E
65.  A  B  C  D  ●
66.  A  ●  C  D  E
67.  A  B  C  ●  E
68.  A  B  ●  D  E
69.  A  B  C  ●  E
70.  A  ●  C  D  E
71.  A  B  C  D  ●
72.  A  B  ●  D  E
73.  A  B  C  D  ●
74.  A  ●  C  D  E
75.  A  B  C  ●  E
76.  ●  B  C  D  E
77.  A  B  C  ●  E
78.  A  ●  C  D  E
79.  A  B  ●  D  E
80.  A  ●  C  D  E
81.  A  B  C  ●  E
82.  ●  B  C  D  E
83.  A  ●  C  D  E
84.  A  ●  C  D  E
85.  A  ●  C  D  E
86.  ●  B  C  D  E
87.  A  ●  C  D  E
88.  ●  B  C  D  E
89.  A  B  ●  D  E
90.  A  B  C  ●  E