

Electrical Math – Practice Exam

ADDITION: *Add the following:*

1. $76589 + 41279 = ?$
 - a. 127978
 - b. 117868
 - c. 111456
 - d. 245178
2. $4/5 + 4/5 = ?$
 - a. $8/10$
 - b. $8/25$
 - c. $8/5$
 - d. $4/5$
3. $3/9 + 7/18 = ?$
 - a. $13/18$
 - b. $5/9$
 - c. $10/9$
 - d. $12/18$

SUBTRACTION: *Subtract the following.*

4. $16580 - 10012 = ?$
 - e. 5668
 - f. 4667
 - g. 5569
 - h. 6568
5. $2\frac{1}{3} - 2\frac{1}{4} = ?$
 - a. $1/6$
 - b. $1/12$
 - c. $1/4$
 - d. $1/3$

MULTIPLICATION: *Multiply the following.*

6. $145 \times 162 = ?$
 - a. 23490
 - b. 307
 - c. 33780
 - d. 23580

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7. $7/10 \times 11/6 = ?$

- a. $2\ 17/60$
- b. $60/17$
- c. $77/60$
- d. $67/60$

8. $2/7 \times 3\ 5/6 = ?$

- a. $1\ 2/21$
- b. $16\ 3/7$
- c. $3/5$
- d. $16\ 4/7$

DIVISION: *Divide the following:*

9. $4892 \div 46 = ?$

- a. 106.35
- b. 108
- c. 107
- d. 107.34

10. $5/6 \div 1/3 = ?$

- a. $3\ 1/2$
- b. $2\ 1/2$
- c. $5/18$
- d. $3\ 3/5$

CALCULATIONS: *Complete the calculations as indicated:*

11. $655.08 + 45 + 890.099 + 0.0035 = ?$

- a. 1510
- b. 1518.9025
- c. 1590.1825
- d. 1509.18

12. $58.3 - 47.975 = ?$

- a. 10.427
- b. 10.5
- c. 11.427
- d. 10.325

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13. $0.35 \times 0.275 = ?$

- a. 0.09625
- b. 0.962
- c. 0.0097
- d. 0.97

DECIMALS: *Convert the following fractions to decimals. Round off to the nearest thousandth:*

14. $7/18'' = ?$

- a. 0.257''
- b. 0.457''
- c. 0.389''
- d. 0.488''

15. $3 \frac{12}{54}'' = ?$

- a. 2.322''
- b. 3.222''
- c. 3.232''
- d. 2.433''

16. $17/14'' = ?$

- a. 1.214''
- b. 1.3''
- c. 1.2''
- d. 1.324''

Convert the following decimals to fractions:

17. $2.375'' = ?$

- a. $18/19''$
- b. $19/8''$
- c. $1/2''$
- d. $8/19''$

18. $0.55'' = ?$

- a. $10/21''$
- b. $11/21''$
- c. $11/20''$
- d. $101/20''$

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19. $0.125 = ?$

- a. $1/8$
- b. $1/4$
- c. $2/9$
- d. $3/4$

Solve the following equations:

20. $5.6700 - 0.0235 = ?$

- a. 6.6466
- b. 5.6465
- c. 6.6467
- d. 5.6466

21. $0.725 \times 1.25 = ?$

- a. 0.90625
- b. 0.92
- c. 0.89624
- d. 0.90

Divide the following decimals:

22. $0.5/0.41 = ?$

- a. 1.220
- b. 12102
- c. 1.9602
- d. 1.97

DECIMALS FRATIONS:

23. $95/10000 = ?$

- a. 0.9500
- b. 0.0950
- c. $19/20$
- d. 0.0095

24. eight thousandths = ?

- a. 0.080
- b. 0.8
- c. 0.008
- d. $80/1000$

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25. thirty-nine ten thousandths =?

- a. $39/1000$
- b. 0.0039
- c. 0.39
- d. 0.00039

ROUNDING:

26. Round 43.2286 to the nearest tenth =?

- a. 43.2
- b. 43.22
- c. 43.3
- d. 43.23

27. Round 43.2286 to the nearest hundredth =?

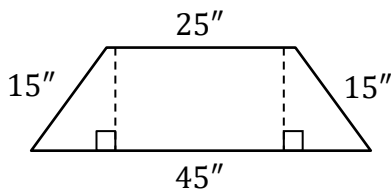
- a. 43.22
- b. 43.229
- c. 43.2
- d. 43.23

28. Round 43.2286 to the nearest thousandth =?

- a. 43.23
- b. 43.229
- c. 43.22
- d. 43.227

AVERAGE:

29. What is the total length of the pieces in the diagram below?



- a. 70"
- b. 25"
- c. 100"
- d. 75"

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30. $(-5) + (7) = ?$

- a. -2
- b. 2
- c. 11
- d. -11

31. $(-4) - (-5) = ?$

- a. -9
- b. 9
- c. -1
- d. 1

SQUARE ROOT:

32. $\sqrt{3136} = ?$

- a. 38
- b. 56
- c. 313
- d. 31

33. $\sqrt{0.49} = ?$

- a. 7
- b. 0.007
- c. 0.7
- d. 49

EXPONENTS:

34. The value of 8^2 is

- a. 16
- b. 4
- c. 56
- d. 64

35. The value of 5^3 is

- a. 125
- b. 225
- c. 25
- d. 105

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EXPRESS THE FOLLOWING IN POWERS OF TEN:

36. $10^6 \times 10^3 = ?$

- a. 10^{18}
- b. 10^9
- c. 10^3
- d. 1000

37. $10^5 - 10^2 = ?$

- a. 10^3
- b. 10^7
- c. 99900
- d. 10^{10}

38. 1,000,000 = ?

- a. 10^5
- b. 10^4
- c. 10^6
- d. 10^4

METRIC:

39. The symbol for a kilogram is?

- a. Km
- b. kg
- c. mm
- d. g

40. A millimeter is what part of a meter?

- a. 1000
- b. 1/100
- c. 1/1000
- d. 10

41. A kilogram is how many grams?

- a. 100
- b. 1000
- c. 0.0001
- d. 0.01

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42. A symbol for milliliters is?

- a. mm
- b. mg
- c. ml
- d. mm

METRIC CONVERSIONS: *Do the following conversions:*

43. $0.007 \text{ Kg} = \text{g}?$

- a. 0.7
- b. 7
- c. 7000
- d. 700

44. $34 \text{ mm} = \text{m}?$

- a. 0.034
- b. 3400
- c. 34
- d. 0.34

45. Twenty-eight resistors have a mass of 201.42 g. What is the mass of each resistor? Express your answer to the nearest tenth of the gram?

- a. 7.19
- b. 7.194
- c. 7.2
- d. 7.21

PERCENT: *Convert the following percent to fractions:*

46. $32 \frac{1}{3}\%$

- a. $32 \frac{2}{6}$
- b. $\frac{97}{300}$
- c. $\frac{97}{3}$
- d. $\frac{96}{300}$

47. $65\% = ?$

- a. $\frac{6}{5}$
- b. $\frac{1}{2}$
- c. $\frac{13}{20}$
- d. $\frac{2}{5}$

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Convert the following fractions to percent:

48. $1/5 = ?$
- a. 20%
 - b. 0.2%
 - c. 0.5%
 - d. 0.05%
49. $3/7 = ?$
- a. $3/7\%$
 - b. 43%
 - c. 0.43%
 - d. 4.3%

Convert the following percent to decimals:

50. 25% = ?
- a. $1/5$
 - b. $25/100$
 - c. 0.025
 - d. 0.25
51. 182%
- a. 1.82
 - b. 18.2
 - c. 0.182
 - d. $91/50$

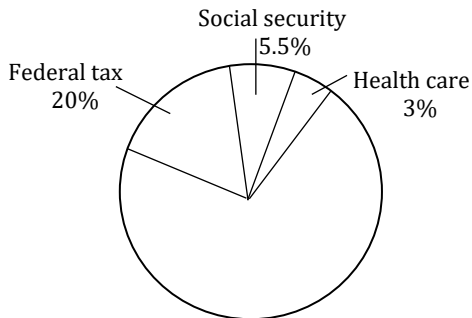
Convert the following decimals to percent:

52. 0.7
- a. 0.7%
 - b. 7%
 - c. 70%
 - d. 700%
53. 3.73 = ?
- a. 373%
 - b. 3.73%
 - c. 37.3%
 - d. 3730%

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PROBLEM SOLVING:

A junior mechanic works 38 hours a week at a rate of \$20.75 per hour. The deductions from their earnings include: federal tax – 20%, social security – 5.5 %, healthcare – 3%. Calculate the amount for each deduction to the nearest cent.



54. Federal tax =?

- a. \$788.85
- b. \$157.7
- c. \$216.20
- d. \$21.62

55. Social security =?

- a. \$399.00
- b. \$788.85
- c. \$43.3675
- d. \$40.00

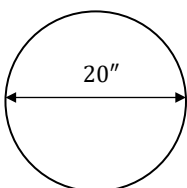
56. Health care =?

- a. \$23.655
- b. \$3.325
- c. \$0.625
- d. \$33.01

GEOMETRY:

QUESTIONS 57 TO 58 REFER TO THE DIAGRAM BELOW:

$$\pi = 3.14$$



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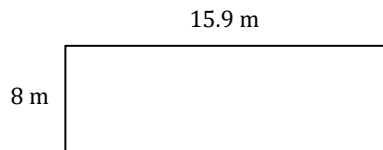
57. The circumference of the circle is

- a. $62 \frac{1}{5}$ "
- b. $62 \frac{4}{5}$ "
- c. $64 \frac{1}{2}$ "
- d. $63 \frac{1}{4}$ "

58. The area of the circle is

- a. 78.5 sq.in.
- b. 1256 sq.in.
- c. 314 sq.in.
- d. 62.8 sq.in.

QUESTIONS 59 AND 60 REFER TO THE DIAGRAM BELOW:



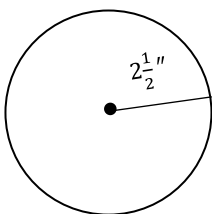
59. For the rectangle above, give the perimeter.

- a. 41.3 m
- b. 47.8 m
- c. 127.2 m
- d. 23.9 m

60. For the rectangle above, give the area.

- a. 127.2 m^2
- b. 125.8 m^2
- c. 23.9 m^2
- d. 47.8 m^2

QUESTIONS 61 TO 63 REFER TO THE DIAGRAM BELOW:

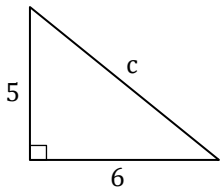


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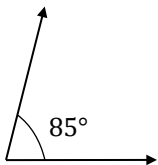
61. For the circle above, give the diameter.
- 4.5"
 - 2.5"
 - 5.0"
 - 5.5"
62. For the circle above, give the circumference.
- 17.5"
 - 15.7"
 - 16.0"
 - 19.63"
63. For the circle above, give the area.
- 20.5 sq.in.
 - 15.7 sq.in.
 - 19.63 sq.in.
 - 15.7 sq.in.

TRIANGLES AND ANGLES

64. Calculate 'c' in the following right triangle.



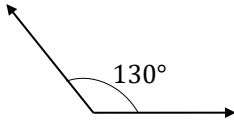
- 3.74
 - 3.32
 - 11
 - 7.81
65. What is the type of angle shown below?



- Right
- Acute
- Obtuse
- Hypotenuse

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66. What is the type of angle shown below?



- a. Right
- b. Hypotenuse
- c. Obtuse
- d. Acute

POWERS: Solve the following:

67. The square of 7 =?

- a. 23
- b. 17
- c. 49
- d. 9

68. $(5/3)^3 = ?$

- a. 15/9
- b. 125/27
- c. 10/27
- d. 25/9

ROOTS: Solve the following:

69. $\sqrt{0.36} = ?$

- a. 0.66
- b. 0.12
- c. 0.6
- d. 0.06

70. $\sqrt{40} = ?$

- a. 6.32
- b. 20
- c. 2
- d. 4

71. $\sqrt{\frac{196}{49}} = ?$

- a. 4
- b. 2
- c. 7
- d. 14

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RATIO AND PROPORTION:

72. Express the following ratio in lowest terms: $18/42 = ?$
- $3/4$
 - $6/7$
 - $9/7$
 - $3/7$
73. Write the inverse of the following ratio: $16/9$
- $9/16$
 - $16/9$
 - 0.56
 - 1.77
74. The primary winding of an electric transformer has 320 runs, and the secondary winding has 18 runs. What is the ratio of the primary winding to the secondary in the most reduced form?
- $18/160$
 - $320/9$
 - $9/160$
 - $160/9$
75. Use proportion to solve the following problem. A cylindrical barrel contains 7 kl of gasoline when filled to a depth of 5 m. How many kl does the barrel contain when the depth is 3 m?
- 11.67 kl
 - 4.2 kl
 - 2.14 kl
 - 3.6 kl
76. Write the following proportion. Do not solve.
- Six hundred meters in 30 seconds is the same as 500 m in 25 seconds.
- $600:500 = 25:30$
 - $600:30 = 500:25$
 - $25:600 = 30:500$
 - $600:25 = 500:30$

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ALGEBRA: *Solve the following:*

77. $5x = 17 + 28$

- a. $x = 19$
- b. $x = 10$
- c. $x = 9$
- d. $x = 4$

78. $Z = \frac{K}{M}$

- a. $K = 0.65$
- b. $K = 35$
- c. $K = ZM$
- d. $K = Z/M$

79. $6r^2 + 36 = 216$

- a. $r = 6$
- b. $r = 5.48$
- c. $r = 30$
- d. $r = 6^2$

80. If $T = \frac{P \times 5}{N}$ and given $T = 150, N = 25$

- a. $P = 550$
- b. $P = 250$
- c. $P = 750$
- d. $P = 150$

EQUATIONS: *Solve for N in the following questions:*

81. $N + 12 = 45$

- a. 24
- b. 4
- c. 33
- d. 13

82. $8N = 40$

- a. 32
- b. 5
- c. 48
- d. $1/5$

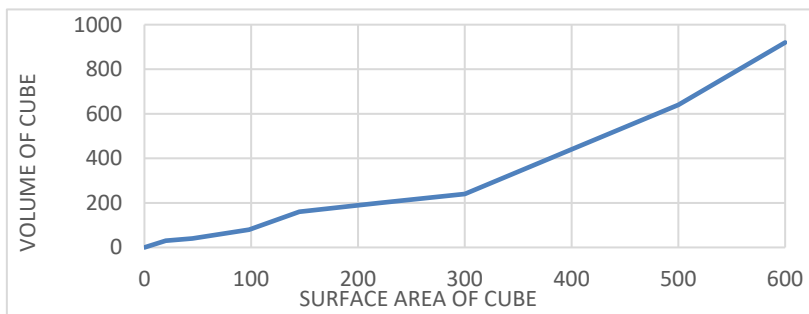
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83. $\frac{N}{14} = 7$

- a. 21
- b. 7
- c. 2
- d. 98

GRAPHS:

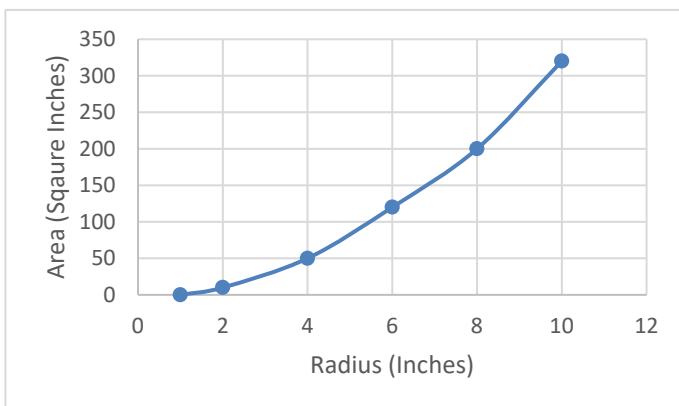
84. In the diagram below, what is the volume of the cube when the surface area is 300 cm²?



- a. 240
- b. 340
- c. 200
- d. 260

QUESTIONS 85 TO 87 INCLUSIVE REFER TO THE ILLUSTRATION BELOW.

Circle Radius Against Circle Area



85. Which kind of graph is this?

- a. Pie graph
- b. Area graph
- c. Linear graph
- d. Comparison graph

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86. What is the approximate radius of a circle with an area of 200 in^2 ?

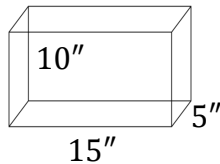
- a. 7.5 in
- b. 9 in
- c. 8 in
- d. 9.5 in

87. What is the approximate area of the circle with a radius of 4 in?

- a. 70 in^2
- b. 50 in^2
- c. 55 in^2
- d. 65 in^2

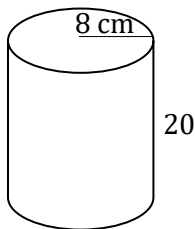
VOLUME:

88. Find the volume of the diagram below.



- a. 30 in^3
- b. 75 in^3
- c. 750 in^3
- d. 250 in^3

89. Find the volume of the diagram below.



- a. 1357.17 cm^3
- b. 502.4 cm^3
- c. 1004.8 cm^3
- d. 4019.2 cm^3

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90. Two swimming pools have the following dimensions.

Pool X: $8\text{m} \times 9\text{m} \times 7\text{m}$

Pool Y: $5\text{m} \times 6\text{m} \times 10\text{m}$

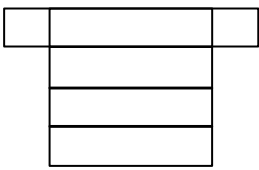
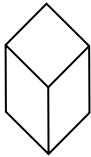
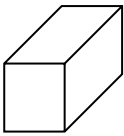
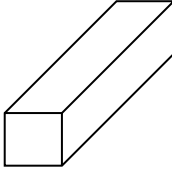
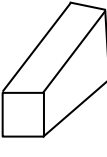
Which pool hold more water?

a. Pool X

b. Pool Y

READING DRAWINGS:

91. Which of the figures below, A, B, C, or D can be made from the shape at the left?

	A	B	C	D
				

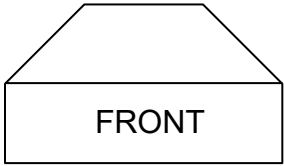
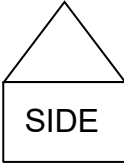
a. A

b. B

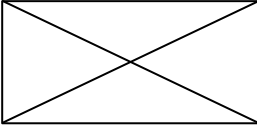
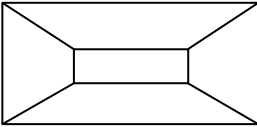
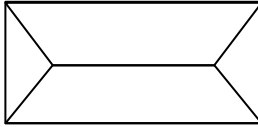
c. C

d. D

92. The front, side and top view of an object are given below:

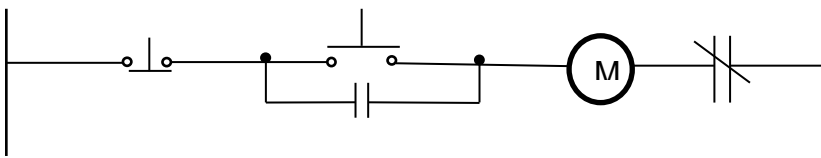
Front view	Side view
	

The shape is:

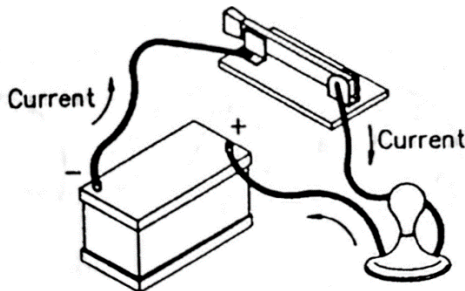
a.	b.	c.	d.
			

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93. The figure below is an example of a
- schematic diagram
 - pictorial diagram
 - block diagram
 - wiring diagram



94. The figure below is an example of a
- pictorial diagram
 - wiring diagram
 - block diagram
 - schematic diagram



95. A circuit schematic is drawn
- in two-dimensional form
 - in several colors
 - with blocks
 - in three dimensional forms
96. To show connections between components, a wiring diagram typically features
- tables
 - blocks
 - diagrams
 - lines

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TRADE SCIENCE:

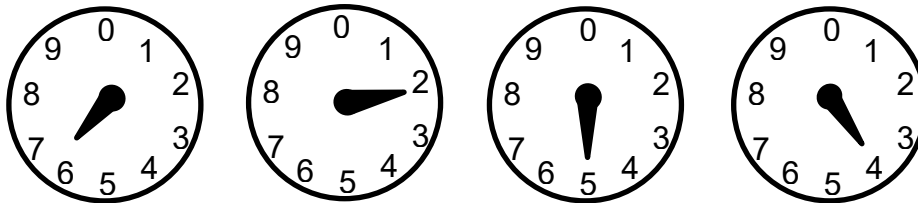
97. Electrical power consumption for appliances is generally ra

- a. meters
- b. kilograms
- c. kilowatt-hour
- d. joule

98. How many volts are equivalent to 1 Kilovolt?

- a. 1
- b. 100 V
- c. 1000 Volt
- d. 10,000 Volt

99. The meter reading is



- a. 7254 kWh
- b. 6143 kWh
- c. 6254 kWh
- d. 7154 kWh

100. What natural property of Earth causes a magnet to align in a specific direction when freely suspended?

- a. Gravitational field
- b. Magnetic field
- c. Rotational inertia
- d. Atmospheric pressure

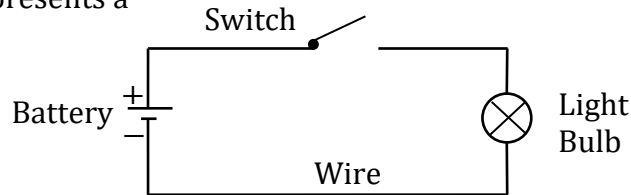
101. What happens to the poles of a magnet when it is cut into two pieces?

- a. Both pieces will have one north and one south pole
- b. One piece will have two north poles, and the other will have two south poles
- c. Both pieces will lose their magnetic properties
- d. One piece will remain a magnet, while other will lose its magnetic properties

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102. The drawing showing a circuit represents a

- a. Open Circuit
- b. Simple Circuit
- c. Partial Circuit
- d. Closed Circuit



103. According to the Law of Conservation of Energy, when energy changes form, the total of energy:

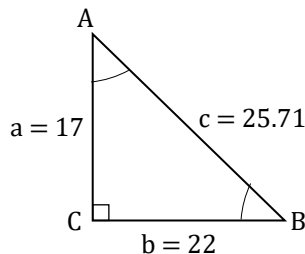
- a. Increases
- b. Decreases
- c. Becomes zero
- d. Stays the same

104. What is the unit of Power?

- a. Ampere
- b. Ohm
- c. Watts
- d. Newton

TRIGONOMETRY:

QUESTIONS 105 TO 107 INCLUSIVE REFER TO THE ILLUSTRATION BELOW



105. In the triangle shown above, $\sin A =$

- a. a/b
- b. c/a
- c. a/c
- d. b/c

106. In the triangle shown above, $\sin B =$

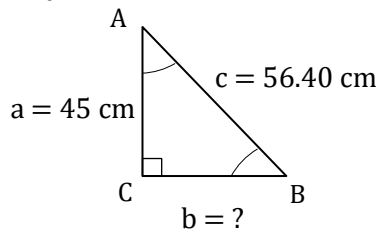
- a. a/b
- b. c/a
- c. a/c
- d. b/c

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107. In the triangle shown above, $\tan A =$

- a. a/b
- b. c/a
- c. b/a
- d. b/a

FOR QUESTIONS 108 TO 110, REFER TO THE ILLUSTRATION BELOW.



108. In the triangle shown above, $\angle B =$

- a. 48.01°
- b. 51.82°
- c. 35.10°
- d. 52.93°

109. In the triangle shown above, $b =$

- a. 45 cm
- b. 34 cm
- c. 68 cm
- d. 55 cm

110. In the triangle above, $\angle A =$

- a. 54.90°
- b. 51.82°
- c. 37.07°
- d. 48.01°

Electrical Math – Practice Exam

Answer Key

1. b	23. d	45. c	67. c	89. d
2. c	24. c	46. b	68. b	90. a
3. a	25. b	47. c	69. c	91. c
4. d	26. a	48. a	70. a	92. d
5. b	27. d	49. b	71. b	93. a
6. a	28. b	50. d	72. d	94. b
7. c	29. c	51. a	73. a	95. a
8. a	30. b	52. c	74. d	96. d
9. a	31. d	53. a	75. b	97. c
10. b	32. b	54. b	76. b	98. c
11. c	33. c	55. c	77. c	99. c
12. d	34. d	56. a	78. c	100. b
13. a	35. a	57. b	79. b	101. a
14. c	36. b	58. c	80. c	102. a
15. b	37. c	59. b	81. c	103. d
16. a	38. c	60. a	82. b	104. c
17. b	39. b	61. c	83. d	105. d
18. c	40. c	62. b	84. a	106. c
19. a	41. b	63. c	85. b	107. c
20. b	42. c	64. d	86. c	108. d
21. a	43. b	65. b	87. b	109. b
22. a	44. a	66. c	88. c	110. c