

Trade Entrance Exam Study Guide

NOTE: The answer key for all the following questions in this study guide can be found at the end of the study guide (page 33)

SECTION THREE: SCIENCE

Studying for the Science section of the trade entrance exam.

Each Entrance Exam includes a section for Science questions. The questions are designed to challenge the exam writer's ability to recall basic information, manipulate basic equations, and interpret basic scientific relationships. The types of questions asked and the difficulty will vary with the exam for each cluster.

38. What does 6.4 liters of water equal in imperial gallons?

- A. 1.408 gal.
- B. 3.635 gal.
- C. 5.628 gal.
- D. 5.632 gal.

This question is applicable to Cluster 2, Cluster 4, Cluster 5.

39. Convert 11.4 km to miles and express to two decimal places.

- A. 5.70 mi.
- B. 7.08 mi.
- C. 9.79 mi.
- D. 18.34 mi.

This question is applicable to Cluster 1, Cluster 2, Cluster 3, Cluster 4, Cluster 5.

40. How many tablespoons are there in 49.74 ml?

- A. 3.50 tbsp.
- B. 10.49 tbsp.
- C. 35.00 tbsp.
- D. 706.81 tbsp.

This question is applicable to Cluster 1, Cluster 2, Cluster 3, Cluster 4, Cluster 5.

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41. When a gas is heated it

- A. expands.
- B. contracts.
- C. condenses.
- D. solidifies.

This question is applicable to Cluster 1, Cluster 2, Cluster 3, Cluster 4, Cluster 5.

42. Water at sea level heated to 100° Celsius would be

- A. expanding.
- B. just beginning to change to a solid.
- C. starting to boil.
- D. contracting.

This question is applicable to Cluster 1, Cluster 2, Cluster 3, Cluster 4, Cluster 5.

43. An object floats in water because the weight of water displaced is

- A. more than the object's weight.
- B. less than the object's weight.
- C. equal to the object's weight.
- D. not related to the object's weight.

This question is applicable to Cluster 1, Cluster 2, Cluster 3, Cluster 4, Cluster 5.

44. The cooling effect of alcohol on the skin is the result of

- A. sublimation of liquids.
- B. condensation of liquids.
- C. evaporation of liquids.
- D. contraction of liquids.

This question is applicable to Cluster 1, Cluster 2, Cluster 3, Cluster 4, Cluster 5.

45. Which of the following could be used to express density?

- A. Grams per centimeter.
- B. Grams per square centimeter.
- C. Grams per cubic centimeter.
- D. Grams per kilometer.

This question is applicable to Cluster 1, Cluster 2, Cluster 3, Cluster 4, Cluster 5.

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46. The pressure gauge on a bottle containing a gas would show a lower reading if the gas in the bottle was
- A. to expand.
 - B. cooled.
 - C. heated.
 - D. a constant temperature.

This question is applicable to Cluster 1, Cluster 2, Cluster 3, Cluster 4, Cluster 5.

47. Which state is matter in if it has a definite shape and a definite volume?
- A. solid.
 - B. liquid.
 - C. gas.
 - D. fluid.

This question is applicable to Cluster 1, Cluster 2, Cluster 3, Cluster 4, Cluster 5.

48. The reason ice floats on water is because it
- A. is a solid.
 - B. contains more air.
 - C. has less heat energy than water.
 - D. is less dense than water.

This question is applicable to Cluster 1, Cluster 2, Cluster 3, Cluster 4, Cluster 5.

49. Compared to an elevation of 1,000 meters, the air pressure at sea level is generally
- A. lower.
 - B. higher.
 - C. the same.
 - D. lower in the summer.

This question is applicable to Cluster 1, Cluster 2, Cluster 3, Cluster 4, Cluster 5.

50. Assuming equal volumes, the expansion of solids is usually
- A. greater than liquids.
 - B. the same as liquids.
 - C. greater than gases
 - D. less than liquids.

This question is applicable to Cluster 1, Cluster 2, Cluster 3, Cluster 4, Cluster 5.

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51. Which of the following is true?

- A. A liquid has no mass, shape, or volume.
- B. A liquid will expand to fit the container it is in.
- C. Liquids **can not** be easily compressed.
- D. A liquid has mass but no shape or volume.

This question is applicable to Cluster 1, Cluster 2, Cluster 3, Cluster 4, Cluster 5.

52. The ability to do work is known as

- A. power.
- B. energy.
- C. force.
- D. effort.

This question is applicable to Cluster 1, Cluster 2, Cluster 3, Cluster 4, Cluster 5.

53. A parallel circuit is one in which

- A. two batteries are included in the circuit.
- B. current can flow through only one path.
- C. current can flow through more than one path.
- D. light bulbs must not be used.

This question is applicable to Cluster 3, Cluster 4, Cluster 5.

54. A series circuit includes several lamps. When the light bulb from one lamp is removed the other lights will

- A. stay lit.
- B. stay lit and get brighter.
- C. stay lit and get dimmer.
- D. no longer be lit.

This question is applicable to Cluster 3, Cluster 4, Cluster 5.

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55. Refer to diagram 003. To ensure safe climbing practice, the base of a straight ladder should be one meter out for every four meters of height to the point of support. If $h = 8$ m, what is the value of d ?
- A. 2 m
 - B. 2.5 m
 - C. 3.2 m
 - D. 4 m

This question is applicable to Cluster 1, Cluster 2, Cluster 3, Cluster 4, Cluster 5.

56. When trying to move a 150 kg rock using a 3 meter pry bar you can make the task easier by placing a smaller rock under the pry bar
- A. 1.0 meter from the large rock.
 - B. 1.5 meters from the large rock.
 - C. 2.0 meters from the large rock.
 - D. 2.5 meters from the large rock.

This question is applicable to Cluster 1, Cluster 2, Cluster 3, Cluster 4, Cluster 5.

57. Given the relationship $E(\text{voltage}) = I(\text{current}) \times R(\text{resistance})$, what is the current in a circuit with $E = 6$ volts and $R = 15$ ohms?
- A. 0.04 amps
 - B. 0.40 amps
 - C. 4.00 amps
 - D. 40.00 amps

This question is applicable to Cluster 3, Cluster 4, Cluster 5.

58. A liter of water has a mass of
- A. 1 kg
 - B. 1 km
 - C. 1 ksec
 - D. 1 kW

This question is applicable to Cluster 2, Cluster 3, Cluster 4.

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59. A fulcrum is used to support a

- A. wedge.
- B. ramp.
- C. drawer.
- D. lever.

This question is applicable to Cluster 2, Cluster 3, Cluster 4, Cluster 5.

60. Which of the following does not affect the amount of heat a body will store?

- A. Density.
- B. Altitude.
- C. Mass.
- D. Both (a) and (c).

This question is applicable to Cluster 2, Cluster 3, Cluster 4, Cluster 5.

61. If friction can cause heat to be released, letting a cord slide quickly through your hands will cause

- A. your hands to feel cool.
- B. your hands to become wet.
- C. your hands to feel warmer.
- D. your hands to feel stiff.

This question is applicable to Cluster 1, Cluster 2, Cluster 3, Cluster 4, Cluster 5.

62. What causes a coasting vehicle in motion to eventually come to a stop?

- A. Friction.
- B. Expansion.
- C. Contraction.
- D. Potential Energy.

This question is applicable to Cluster 3, Cluster 4, Cluster 5.

63. The chemical combination of two or more elements is known as a/an

- A. isotope.
- B. ion.
- C. compound.
- D. catalyst.

This question is applicable to Cluster 1, Cluster 2, Cluster 3, Cluster 4, Cluster 5.

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64. The molecular composition of water is
- A. 2 hydrogen atoms + 2 oxygen atoms.
 - B. 1 hydrogen atom + 1 oxygen atom.
 - C. 2 hydrogen atoms + 1 oxygen atom.
 - D. 2 oxygen atoms + 1 Hydrogen atom.

This question is applicable to Cluster 1, Cluster 2, Cluster 3, Cluster 4, Cluster 5.

65. If a gas in a closed space is compressed, it will
- A. decrease in temperature.
 - B. increase in temperature.
 - C. solidify.
 - D. move more slowly.

This question is applicable to Cluster 3, Cluster 4, Cluster 5.

66. The reason inventors have not been able to invent a machine that is 100% efficient is because of
- A. gravity.
 - B. inertia.
 - C. technology.
 - D. friction.

This question is applicable to Cluster 2, Cluster 3, Cluster 4, Cluster 5.

67. How much work is done in 1 minute by a machine operating at 300 ft. lb./sec
- A. 300 ft lb
 - B. 1,800 ft lb
 - C. 18,000 ft lb
 - D. 180,000 ft lb

This question is applicable to Cluster 2, Cluster 3, Cluster 4, Cluster 5.

68. The volume of a cube which is 5 meters per side is
- A. 5 cubic meters.
 - B. 25 cubic meters.
 - C. 75 cubic meters.
 - D. 125 cubic meters.

This question is applicable to Cluster 2, Cluster 3, Cluster 4, Cluster 5.

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69. Refer to Diagram 020. Four pumps are shown in the diagram. Arrows show the direction the piston is being moved. Choose the only pump that will pump water.
- A.
 - B.
 - C.
 - D.

This question is applicable to Cluster 3, Cluster 4.

70. Refer to Diagram 014. Which diagram shows what happens when heat is applied to a bi-metal strip consisting of stainless steel on the top and brass on the bottom? (Brass has the higher expansion rate.)
- A.
 - B.
 - C.
 - D.

This question is applicable to Cluster 1.

Trade Entrance Exam Answer Key

1.	A
2.	D
3.	C
4.	D
5.	A
6.	D
7.	C
8.	B
9.	B
10.	B
11.	C
12.	C
13.	D
14.	C
15.	C
16.	B
17.	D
18.	D
19.	C
20.	C
21.	B
22.	A
23.	C
24.	A
25.	D
26.	D
27.	B
28.	D
29.	C
30.	C
31.	C
32.	B
33.	D
34.	A
35.	C

36.	B
37.	D
38.	A
39.	B
40.	A
41.	A
42.	C
43.	C
44.	C
45.	C
46.	B
47.	A
48.	D
49.	B
50.	D
51.	C
52.	B
53.	C
54.	D
55.	A
56.	A
57.	B
58.	A
59.	D
60.	B
61.	C
62.	A
63.	C
64.	C
65.	B
66.	D
67.	C
68.	D
69.	D
70.	C