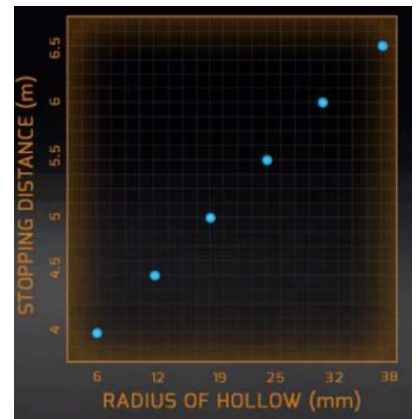
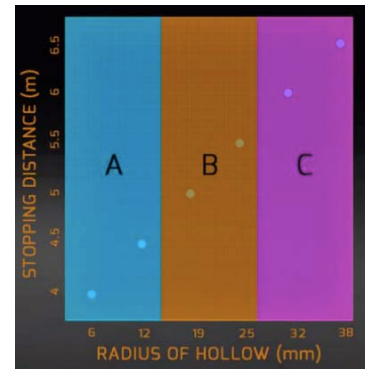


Hockey Scholars: Math and Science Test Study Guide-Answer Key

- On this scatterplot, the skate blades with the largest radius of hollow are found in: **Section C**
- Using this scatterplot, you can conclude that skate blades with the smallest radius of hollow tend to have: **Shorter stopping distance**
- Based on the graph, which statement is correct?
 - As radius of hollow increases, the stopping distance increases
 - As radius of hollow increases, the stopping distance stays the same
 - As radius of hollow increases, the stopping distance decreases.
 - There is no correlation between radius of hollow and stopping distance.
- Based on this data, the blades with the shortest stopping distance are: **Section A**
- In a positive correlation, when one variable increases, the other variable: **Increases**
- Based on this data, you could expect a skate blade with a radius of hollow of 19mm to have a stopping distance of: **5M**
- In this experiment, you are changing the skate blade's radius of hollow and measuring its effect on stopping distance. The stopping distance is the: **The Dependent Variable**
- During an experiment, an independent variable: **Changed at specific points**
- Using the scatterplot, what type of correlation is shown between radius of hollow and stopping distance? **There is a positive correlation**
- In a science experiment, a correlation is: **A relationship between variables**
- Mark skated 15 meters in 5 seconds. What was his average speed? **3 meters per second**
- What unit can be used to measure speed? **Meters per second (m/s), miles per hour (m/h) or kilometers per hour (k/h)**



13. Fill in the missing value in the table: **6**

DISTANCE (M)	TIME (S)	SPEED (M/S)
30	?	5

14. Fill in the missing value in the table: **4**

DISTANCE (M)	TIME (S)	SPEED (M/S)
24	6	?

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15. Why would someone perform multiple trials in an experiment? **To make sure the data is reliable**

16. A player's sprint speeds are listed in the table. To calculate this player's average speed: **Add the speeds and divide by 4**

TRIAL	TRIAL 1	TRIAL 2	TRIAL3	TRIAL4
SPEED (METERS PER SECOND)	6 M/S	5 M/S	7 M/S	5 M/S

17. Player A and Player B are skating the same distance, but Player B covers the distance in less time. Which player had the greater speed? **Player B**

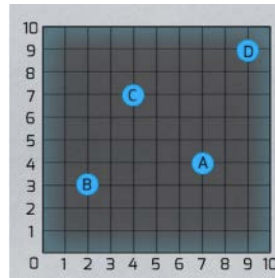
18. The average of a set of numbers is: **The sum of values divided by the number of values**

19. The table shows Lisa's speed for three trials. What was Lisa's average speed? **6 m/s**

TRIAL	TRIAL 1	TRIAL 2	TRIAL3
SPEED (METERS PER SECOND)	2 M/S	7 M/S	9 M/S

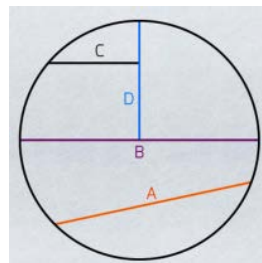
20. The calculation for speed is: **Distance divided by time**

21. What is the location of Point A? **(7,4)**



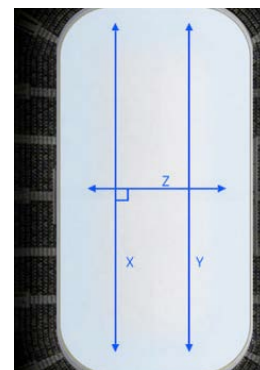
22. Two geometric figures are congruent if they are: **the same size and shape**

23. In this circle, the radius is labeled as: **D**

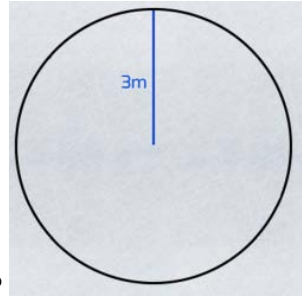


24. Perpendicular lines intersect to form **90 degree** angles.

25. In the image, which lines are parallel? **Line X and Line Y**



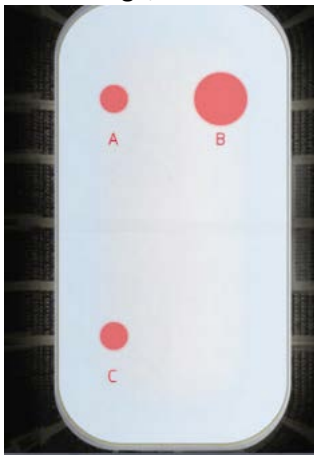
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26. What is the length of the circle's diameter?
6 meters

27. A line segment: **is a portion of a line**

28. In this image, which circles are congruent? **Circle A and Circle C**



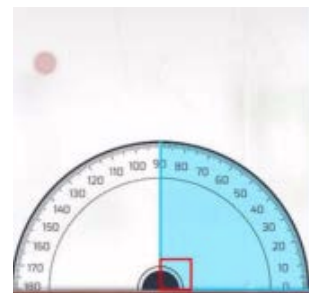
29. What types of lines are always the same distance apart? **Parallel Lines**

30. An ordered pair's location is described by: **1 X coordinate and 1 Y coordinate**

31. What tool is used to measure angles? **Protractor**

32. Angles are measured in this unit: **Degrees**

33. What is the measurement for the angle pictured? **90 degrees**



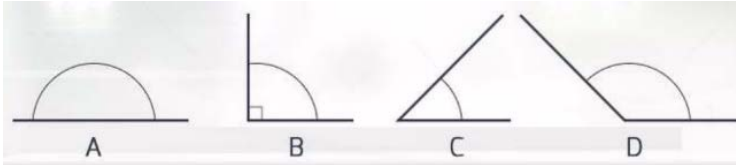
34. What is the measurement for the angle pictured (in yellow)?
45 degrees



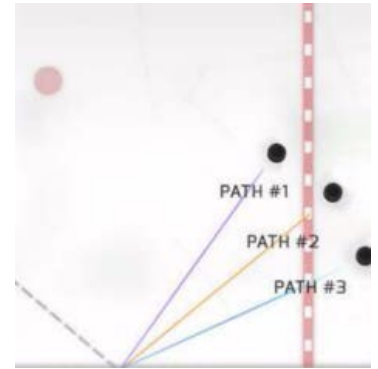
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35. The Law of Reflection applies to: Hockey pucks bouncing off the boards, light bouncing off of a mirror, and sound bouncing off a wall

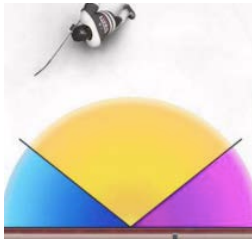
36. Which angle has a measurement equal to 180° ? A



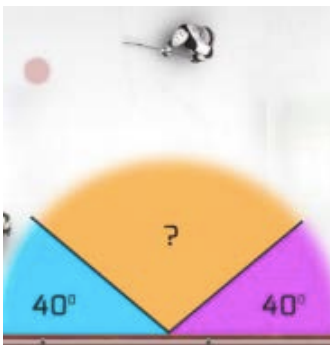
37. In this image, after the puck bounces off the boards, what path will it take? Path #2



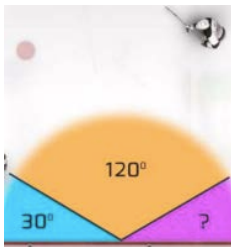
38. This picture shows three non-overlapping angles that all lie on a straight line. Their angle measurements will add up to: 180 degrees



39. What is the value of the missing angle? 100 degrees

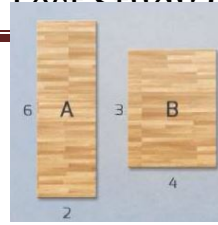


40. What is the value of the missing angle? 30 degrees



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41. Which rectangle has the greater area?
Rectangle A and B have the same area



42. What is the area of a panel that is 10 meters long and 5 meters wide? 50 square meters
43. The length and width of the rectangle are given in meters. The rectangle's area is measured in these units: Square meters

44. What is the value of the unknown side?
3



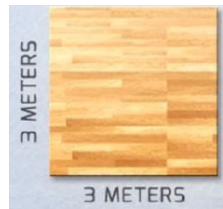
45. A unit square: Is used to measure area, Has sides equal to 1 unit, and Has an area of 1 square unit

46. The total blue shaded area is:
30 square meters



47. The area formula for a rectangle is: Area = length x width

48. What is the area of this rectangle?
9 square meters
- a. 6 square meters
 - b. 9 meters
 - c. 6 meters

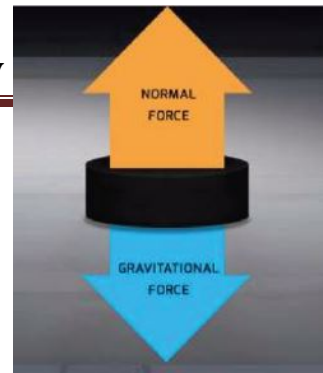


49. What is the value of the unknown side?
6



50. The general unit of measurement for area is: Square units

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51. If all forces on a puck are balanced, as pictured, the puck will:
Stay still

52. The magnitude of a force is: **How fast an object moves when it is pushed**

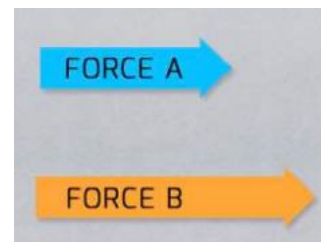
53. Friction will cause a moving object to: **Slow down over time**

54. When there is no friction, a gliding puck will: **Keep gliding at the same speed**

55. When there is more friction, a player must apply more force to shoot the puck the same distance.

56. If the player is about to shoot the puck, applying more force will cause the puck to: **Travel a longer distance and travel faster**

57. Using this image, which force has a greater magnitude?
Force B



58. If an object isn't moving, the forces acting on the object are: **Balanced**

59. Every force has both: **Magnitude and direction**

60. A puck is sitting motionless on the ice. Why does it continue to stay in one place? **An object at rest will stay at rest**

61. As ice melts into water, the kinetic energy of its molecules: **Increases**

62. As temperature increases, molecules will: **Move faster and gain kinetic energy**

63. As the temperature of water gets colder, the speed of its molecules: **Decreases**

64. As molecules speed up, what happens to their kinetic energy? **It Increases**

65. Which phase of matter has molecules with the highest kinetic energy? **Gas**

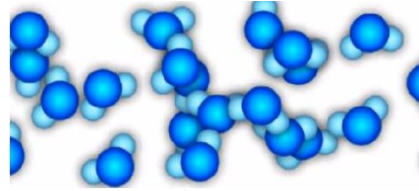
66. H₂O and O₂ are examples of: **Molecules**

67. As an ice block is heated, it will go through the phases in what order:
Solid phase → liquid phase → gas phase

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68. Which phase of matter is displayed in this image?

Liquid Phase



69. What is the smallest unit of matter? **Atoms**

70. In the gas phase, a sample of molecules will have:

No fixed shape and volume

71. As the puck falls, the amount of potential energy it has decreases. Why? **It is changed into kinetic energy**

72. As the puck falls, its potential energy (PE): **Decreases**

73. The total energy before the puck drop will be **Equal (=)** to the total energy after the drop.

74. An object's potential energy is due to its: **position**

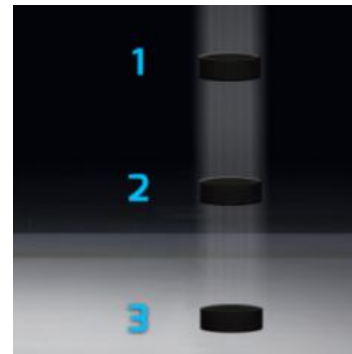
75. Which puck has the most potential energy? **Puck #1**



76. A faster moving object has: **more kinetic energy**

77. As the puck falls, its kinetic energy (KE): **Increases**

78. The image shows a puck falling to the ice. At which point along its fall will the puck have the MOST kinetic energy? **Puck #3**



79. As the puck falls, its potential energy will:

Convert into kinetic energy



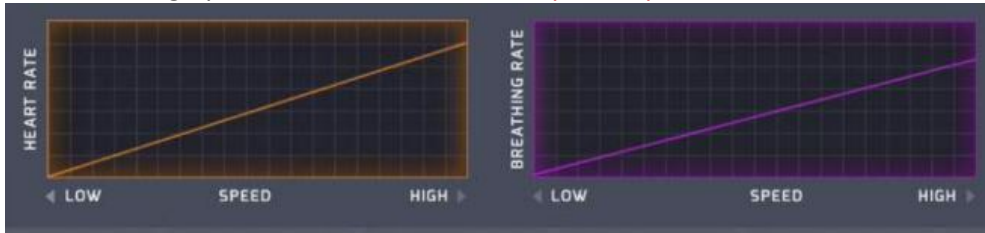
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80. When the puck is dropped, the potential energy will be equal (=) to the kinetic energy when it lands.
81. A player is skating at constant speed. As his mass increases, his kinetic energy will: **increase**
82. A player's kinetic energy will most be affected by his: **Speed**
83. If the speed of a player doubles (2x), his kinetic energy will: **Quadruple**
84. Kinetic energy is: **Defined as the energy of motion and affected by mass and speed**
85. In a science experiment, an independent variable is: **Changed purposely by the scientist**
86. As players speed up, their kinetic energy will: **Increase**
87. If the mass of a player triples (3x), the kinetic energy of a player will: **Triple (3X)**
88. In an experiment, a scientist should: **Change only one variable at a time**
89. Which will have the GREATEST impact on kinetic energy?
a. Doubling (2x) the mass
b. Tripling (3x) the speed
c. Doubling (2x) the speed
d. **Tripling (3x) the mass**
90. Which will have the MOST kinetic energy?
a. A puck traveling at 10 mph
b. A puck traveling at 40 mph
c. A player traveling at 10 mph
d. A player traveling at 40 mph
e. **Not enough information**
91. When exercising, muscle cells need more oxygen, so a person's breathing rate will: **Increase**
92. What organ system is responsible for transporting oxygen to your cells? **Circulatory system**
93. Your heart rate increases when exercising because: **Your muscle cells need more oxygen**
94. Groups of specialized cells that work together are called: **Tissues**
95. Based on the graph, what is the relationship between breathing rate and exercise? **More intense exercise results in faster breathing rate**



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96. Based on the graphs, more intense exercise: **Speeds up the heart rate**



97. What type of cell carries oxygen in the bloodstream? **Red blood cells**

98. The circulatory system is made up of: **The heart and blood vessels**

99. What some examples of organs? **Heart**

100. The circulatory system: **Transports oxygen to the body's cells, Absorbs oxygen from the lungs, and carries oxygen in the blood stream**

101. Using the data, which conclusion would you draw?
- All players prefer flexible sticks.
 - Most players prefer flexible sticks.
 - Players that take wrist shots prefer flexible sticks.**
 - Players that take wrist shots prefer stiffer sticks.

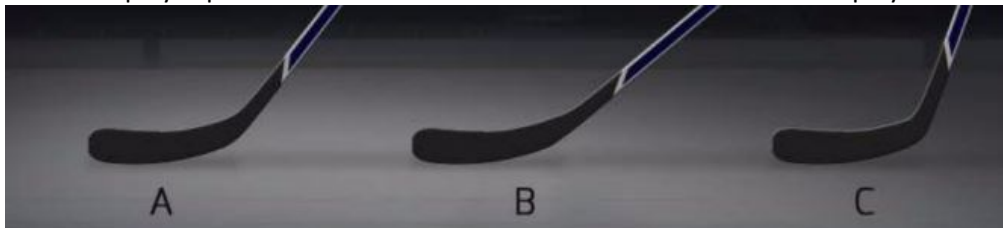
ROUND	SHOT STYLE	FLEX
1	WRIST	FLEXIBLE
2	SLAP	STIFF
3	WRIST	FLEXIBLE
4	WRIST	FLEXIBLE
5	SLAP	STIFF

102. What is the main difference between quantitative data and qualitative data?
Quantitative data uses numbers; qualitative data means descriptions

103. A player mostly takes slap shots and has a crouched skating style. Which stick design would you chose for the player?
- A flexible stick with low lie
 - A flexible stick with high lie
 - A stiff stick with low lie**
 - A stiff stick with high lie

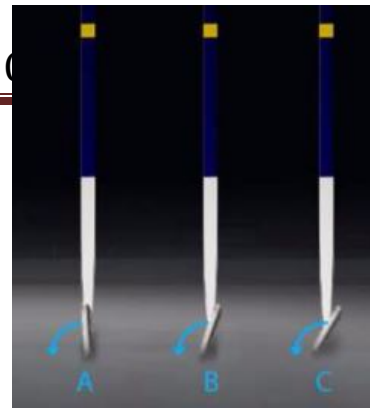
104. Criteria are: **Requirements that are used to make decisions.**

105. A player prefers to skate low to the ice. Which stick should the player choose? **Stick B**



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106. A player prefers to make shots that stay low to the ice. Which stick should the player choose? **Stick A**



107. "Players who skate in a crouched position prefer sticks with a low lie." This observation is a type of: **Qualitative data**
108. An observation is a: **a type of data that is recorded by the experimenter, what an experimenter sees, hears, or smells, and any important information an experimenter collects**
109. In a science experiment, a variable is: **Purposely changed by the experimenter**
110. Based on the data, the face angle of a hockey stick can affect:

The height of the players shot

ROUND	HEIGHT OF TARGET	FACE ANGLE
1	LOW	CLOSED
2	HIGH	OPEN
3	HIGH	OPEN
4	LOW	CLOSED
5	HIGH	OPEN

111. This set of goalie pads has a low movement rating. What would you adjust to improve the rating? **Change the shape to round, change the shell material to synthetic leather, change the padding material to soft foam**



112. During an experiment, an independent variable is a variable that: **is changed**
113. During an experiment, a controlled variable: **stays the same**
114. Criteria are: **Requirements that are used to make decisions**

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115. In experiments, scientists only change one variable at a time because: **It helps them test the specific effect of that variable**

116. You are comparing the performance of these two leg pads. In your experiment, what is a controlled variable?



- a. Shell material
- b. **Padding material**
- c. Weight of the pads
- d. All variables are controlled

117. You are comparing the performance of these two leg pads. In your experiment, what is your independent variable?

- a. Weight of the pads
- b. Shape of the pads
- c. Padding material
- d. **Shell material**

118. Based on the data, what conclusion could you reasonably make about soft foam? **Soft foam better absorbs the impact of the puck**

MATERIAL	MOVEMENT	PROTECTION	COVERAGE
DEER HAIR	3	5	6
HARD FOAM	6	9	9
SOFT FOAM	6	10	6

119. Using the data, what shell material optimizes for movement? **Synthetic leather**

MATERIAL	MOVEMENT	PROTECTION	COVERAGE
LEATHER	3	6	7
SYNTHETIC	6	6	7

120. Using the data, which padding material optimizes for protection? **Soft foam**

MATERIAL	MOVEMENT	PROTECTION	COVERAGE
DEER HAIR	3	5	6
HARD FOAM	6	9	9
SOFT FOAM	6	10	6