

SAMPLE ALGORITHMIC QUESTIONS

Find below seven pairs of questions. Members of each pair are random recalculations of the same question. Algorithmic variables are shaded. The 7 Algogen wizards are Excel macros that simplify making these questions by automatically linking the Microsoft Word question scenario to the underlying spreadsheet random variables.

Pair 1. Created with the "Standard Numerical" wizard: the correct numerical answer has 1/5th chance of being in location a-to-e, and 1/5th chance being smallest-to-largest.

A car traveling at a constant speed of 75 miles per hour passes a trooper hidden behind a billboard. One second after the speeding car passes the billboard, the trooper sets off in chase with a constant acceleration of 6.2 feet/second². How many seconds does it take the trooper to overtake the speeding car?

- a. 40 b. 53 c. 36 d. 49 e. 44

A car traveling at a constant speed of 85 miles per hour passes a trooper hidden behind a billboard. One second after the speeding car passes the billboard, the trooper sets off in chase with a constant acceleration of 7.4 feet/second². How many feet does it take the trooper to overtake the speeding car?

- a. 4,970 b. 5,320 c. 5,114 d. 4,852 e. 5,225

Pair 2. Created with the "One-Correct Pair" wizard: the answer has two correctly matched variables (words or strings)

A car traveling at a constant speed of 75 miles per hour passes a trooper hidden behind a billboard. One second after the speeding car passes the billboard, the trooper sets off in chase with a constant acceleration of 6.2 feet/second². How long does it take the trooper to overtake the speeding car?

- a. overtaking occurs after 31.7 seconds and 3,487 feet
b. overtaking occurs after 36.5 seconds and 3,487 feet
c. overtaking occurs after 27.6 seconds and 3,487 feet
d. overtaking occurs after 31.7 seconds and 4,010 feet
e. overtaking occurs after 36.5 seconds and 4,010 feet

A car traveling at a constant speed of 85 miles per hour passes a trooper hidden behind a billboard. One second after the speeding car passes the billboard, the trooper sets off in chase with a constant acceleration of 7.4 feet/second². How long does it take the trooper to overtake the speeding car?

- a. overtaking occurs after 34.7 seconds and 4,970 feet
b. overtaking occurs after 39.9 seconds and 4,322 feet
c. overtaking occurs after 45.8 seconds and 4,970 feet
d. overtaking occurs after 39.9 seconds and 4,970 feet
e. overtaking occurs after 34.7 seconds and 4,322 feet

Pair 3. Created with the “Three Correct Pairs” wizard: three correct pairs are rearranged so that only one correct choice appears

Which statement correctly matches the planet with its distance from the sun?

- a. Mercury is 68 million miles from the sun
- b. Earth is 68 million miles from the sun
- c. Venus is 93 million miles from the sun
- d. Mercury is 36 million miles from the sun
- e. Earth is 36 million miles from the sun

Which statement correctly matches the planet with its distance from the sun?

- a. Earth is 93 million miles from the sun
- b. Venus is 93 million miles from the sun
- c. Mercury is 93 million miles from the sun
- d. Mercury is 68 million miles from the sun
- e. Venus is 36 million miles from the sun

Pair 4. Created with the “True / False” wizard: The random attribute is that on one version a true statement may appear whereas on the next it may be a false statement. Inclusion of algorithmic variables in the statement increases the number of possible permutations.

TRUE OR FALSE: There exists a put option with strike of \$22.50 written on a stock with current share price of \$27.90 so the option is out-of-the-money.

- a. True
- b. False

TRUE OR FALSE: There exists a call option with strike of \$50.00 written on a stock with current share price of \$58.00 so the option is out-of-the-money.

- a. True
- b. False

Pair 5. Created with the “Boolean Choices” wizard: a-to-e selections have 1/5th chance of being correct, and choices a-to-c display true or false statements as appropriate; choice D specifies with 1/3rd chance either A&B, A&C, or B&C; choice E specifies with 1/2 chance either ALL or NONE. Choices a-to-c may contain words, numbers, or some combination.

Ayer Juan y Elena fueron a la **piscina**, y mañana yo me voy a la **tienda**. Escoja la selección que correctamente usa las palabras y tensos de verbos.

- a. Yo nadaré y usaré una toalla.
- b. Yo compraré ropa y cosas bonitas.
- c. Se quemará el sol.
- d. Two choices, A and C, are correct
- e. The three A-B-C choices are all **correct**

Ayer Juan y Elena fueron a la **tienda**, y mañana yo me voy a la **piscina**. Escoja la selección que correctamente usa las palabras y tensos de verbos.

- a. Yo nadaré y usaré una toalla.
- b. Ellos compraré ropa y cosas bonitas.
- c. Me quemará el sol.
- d. Two choices, A and C, are correct
- e. The three A-B-C choices are all **correct**

Pair 6. Created with the “Standard Verbal” wizard: behind each a-to-e selection is one true and one false statement; there is 1/5th chance that the correct choice for any one selection appears

Jack and Jill were bird-watching. In the parking lot they saw some crows. Flying everywhere as they entered the woods were **orioles**. As they walked along the path were **swallows**. At the tall hardwoods were **mockingbirds**. Finally, at the flower blossoms they saw a **hummingbird**. Which statement is correct?

- a. In the parking lot they saw birds from family **Hirundinidae**.
- b. Flying in the woods were birds from family **Mimidae**.
- c. As they walked along the path were birds from family **Hirundinidae**.
- d. Near the tall hardwoods were birds from family **Mimidae**.
- e. At the flower blossoms they saw a bird from family **Mimidae**.

Jack and Jill were bird-watching. In the parking lot they saw some crows. Flying everywhere as they entered the woods were **mockingbirds**. As they walked along the path were **swallows**. At the tall hardwoods were **orioles**. Finally, at the flower blossoms they saw a **hummingbird**. Which statement is correct?

- a. In the parking lot they saw birds from family **Mimidae**.
- b. Flying in the woods were birds from family **Trochilidae**.
- c. As they walked along the path were birds from family **Hirundinidae**.
- d. Near the tall hardwoods were birds from family **Mimidae**.
- e. At the flower blossoms they saw a bird from family **Embirizidae**.

Pair 7. Created with the "Simplistic Verbal" wizard: one true statement automatically rearranges among four wrong choices

Which state of matter responds the most to changes in temperature or pressure?

- a. Gases have the greatest change in volume with changes in temperature or pressure.
- b. Solids have the greatest change in volume with changes in temperature or pressure.
- c. Liquids have the greatest change in volume with changes in temperature or pressure.
- d. Liquids and solids have the greatest change in volume with changes in temperature or pressure.
- e. Liquids and gases have the greatest change in volume with changes in temperature or pressure.

Which state of matter responds the most to changes in temperature or pressure?

- a. Liquids have the greatest change in volume with changes in temperature or pressure.
- b. Liquids and gases have the greatest change in volume with changes in temperature or pressure.
- c. Liquids and solids have the greatest change in volume with changes in temperature or pressure.
- d. Gases have the greatest change in volume with changes in temperature or pressure.
- e. Solids have the greatest change in volume with changes in temperature or pressure.