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• Passage 3 Level 7

Passage

Have you ever wondered what keeps a hot air balloon flying? The same principle that keeps food frozen in the open chest freezers at the grocery store allows hot air balloons to fly. It's a very basic principle: Hot air rises and cold air falls. So while the super-cooled air in the grocery store freezer settles down around the food, the hot air in a hot air balloon pushes up, keeping the balloon floating above the ground. In order to understand more about how this principle works in hot air balloons, it helps to know more about hot air balloons themselves.

A hot air balloon has three major parts: the basket, the burner, and the envelope. The basket is where passengers ride. The basket is usually made of wicker. This ensures that it will be comfortable and add little extra weight. The burner is positioned above the passenger's heads and produces a huge flame to heat the air inside the envelope. The envelope is the colorful fabric balloon that holds the hot air. When the air inside the envelope is heated, the balloon rises.

The pilot can control the up-and-down movements of the hot air balloon by regulating the heat in the envelope. To ascend, the pilot heats the air in the envelope. When the pilot is ready to land, the air in the balloon is allowed to cool and the balloon becomes heavier than air. This makes the balloon descend.

Before the balloon is launched, the pilot knows which way the wind is blowing. This means that she has a general idea about which way the balloon will go. But, sometimes the pilot can actually control the direction that the balloon flies while in flight. This is because the air above the ground is sectioned into layers in which the direction of the wind may be different. So even though the pilot can't steer the balloon, she can fly or higher or lower into a different layer of air. Some days the difference between the direction of the wind between layers is negligible. But other days the difference is so strong that it can actually push the balloon in a completely different direction!

Questions

1) According to the passage, balloon pilots control the balloon's altitude by

A. moving into a different layer of air
B. regulating the air temperature inside the balloon
C. adjusting the amount of air in the envelope
D. changing the amount of weight contained in the basket

2) As used in paragraph 3, which is the best synonym for **ascend**?

A. move
B. fly
C. sink
D. climb

3) As used in paragraph 3, which is the best antonym for **descend**?

A. fall
B. float
C. rise
D. drop

4) According to the author, wicker is

I. comfortable
II. lightweight
III. durable

A. I only
B. I and II only
C. II and III only
D. I, II, and III

5) If the hot air balloon pilot wants to change directions during flight, what might he or she do to accomplish this?

A. head toward a mountain peak
B. wait for it to rain
C. fly into a cloud
D. fly higher

6) Using the passage as a guide, it can be inferred that which of the following statements is not true?

A. Air goes up and out the top of a chimney when you light a fire.
B. Cool air collects about the ceiling when you open a refrigerator.
C. Smoke from a candle rises after you blow out the flame.
D. Cold air coming from an air conditioning vent settles about the floor.

7) Based on its use in paragraph 4, it can be understood that **negligible** belongs to which of the following word families?

A. solemn, grave, serious
B. substantial, considerable, large
C. exhilarating, thrilling, exciting
D. insignificant, small, unnoticeable

Answers and Explanations

1) **B**
In paragraph 3, the author talks about how the pilot can "control the up-and-down movements of the hot air balloon." This is done by regulating the air temperature inside the balloon. Because hot air rises, the balloon ascends when filled with hot air. Because cold air falls, the balloon descends when filled with cool air. Choice **(B)** best describes this idea. Choice **(A)** is incorrect because moving into a different layer of air is used to change the direction of the balloon, not the altitude. Choice **(C)** is incorrect because although the passage does talk about adjusting the temperature of the air in the envelope, it does not mention the adjusting of the amount of air in the envelope. Choice **(D)** is incorrect because the passage does not discuss changing the amount of weight contained in the basket.

2) **D**
ascend *(verb):* to climb or move upward.
The question asks us to find the best synonym. Synonyms are words that have nearly the same meanings. In paragraph 3, the author says, "The pilot can control the up-and-down movements of the hot air balloon by regulating the heat in the envelope. To ascend, the pilot heats the air in the envelope." Given what we know from paragraph 1 about hot and cold air (hot air rises, cold air falls), we can infer that if you heat the air in the envelope, this will cause the hot air balloon to climb. Using this information, we know that *climb* means almost the same thing as *ascend*. Therefore, we know that *climb* is the best synonym for *ascend*. Therefore **(D)** is correct. The passage does not provide information to support choices **(A)**, **(B)**, and **(C)**. Therefore they are incorrect.

3) **C**
descend *(verb):* to fall or move downward.
The question asks us to find the best antonym. Antonyms are words that have opposite meanings. In paragraph 3, the author says, "When the pilot is ready to land, the air in the balloon is allowed to cool and the balloon becomes heavier than air. This makes the balloon descend." Given that the author is describing a situation in which the pilot wants to land, we can infer that the pilot will need to go down, or *descend*. *Rise* is the best antonym, or opposite, of descend. Therefore **(C)** is correct. The passage does not provide information to support choices **(A)**, **(B)**, and **(D)**. Therefore they are incorrect.

4) **B**
Paragraph 2 states that the basket is made of wicker. This "ensures that the basket will be comfortable and add little extra weight." This supports **option (I)**. Also, given that this ensures that the basket will add little weight, we can infer that wicker is a lightweight material. This supports **option (II)**. The author does not mention anything about how durable wicker is. If anything, we can infer that something comfortable and lightweight is probably not very durable. This supports eliminates **option (III)**. Therefore **(B)** is correct.

5) **D**
In the last paragraph, the author tells us that "sometimes the pilot can actually control the direction that the balloon flies while in flight" This is because the air above the ground is sectioned into layers in which the direction of the wind may be different. The author concludes by saying that "even though the pilot can't steer the balloon, she can fly or higher or lower into a different layer of air." Using this information, we can understand that if the hot air balloon pilot wants to change directions during flight, he or she might fly higher. Choice **(D)** is correct. The

passage does not provide information to support choices **(A)**, **(B)**, and **(C)**. Therefore they are incorrect.

6) **B**
In paragraph 1, we learn that "Hot air rises and cold air falls." Therefore, the cool air inside a refrigerator would fall to the floor when you open the door, not collect about the ceiling. This means **(B)** is not true, and therefore correct. When you have a fire, the air inside the chimney is hot. Therefore, it can be inferred that air goes up and out the top of a chimney when you have a fire. **(A)** is incorrect. Smoke is hot. So it rises. Therefore, it can be inferred that smoke from a candle rises after you blow out the flame. **(C)** is incorrect. Cold air falls. Therefore, it can be inferred that cold air coming from an air conditioning vent settles about the floor. **(D)** is incorrect.

7) **D**
In paragraph 4, the author says "Some days the difference between the direction of the wind between layers is negligible." The author then contradicts this idea by telling us, "But other days the difference is so strong that it can actually push the balloon in a completely different direction!" Since the author contrasts the negligible effect of the wind with the strong, or substantial, effect of the wind, we can understand that negligible and strong are opposites. Because *insignificant, small,* and *unnoticeable* are all opposites for strong, we can understand that **(D)** is correct. The passage does not provide information to support choices **(A)**, **(B)**, and **(C)**. Therefore they are incorrect.