Why Do We Get Goosebumps?

A tiny muscle at the base of each hair, the arrector pili, contracts in cold or fear: the hair stands up and the skin around it rises into a bump.

Name: Date: Score: ____ / 16

A. Fill in the blanks

1. The tiny muscle attached to each hair follicle is the ____.

2. Goosebumps are an ____ reflex: we cannot produce them at will.

3. The hormone released in fear that helps trigger goosebumps is ____.

4. In furry animals, raised fur traps a layer of ____.

B. True or False

5. The arrector pili is a voluntary skeletal muscle. True / False

6. Goosebumps can be triggered by strong emotions such as fear. True / False

7. Goosebumps keep humans as warm as they keep furry animals. True / False

8. A cat's raised fur makes it look bigger to a threat. True / False

C. Assertion and reason

9. Assertion (A): Goosebumps are called a vestigial (leftover) reflex in humans.
Reason (R): Humans have too little body hair for the reflex to warm or protect them much.

(a) Both A and R are true, and R explains A
(b) Both A and R are true, but R does not explain A
(c) A is true, R is false
(d) A is false, R is true

Answer: _____

10. Assertion (A): Goosebumps appear when we are cold.
Reason (R): Cold activates sympathetic nerves that contract the arrector pili.

(a) Both A and R are true, and R explains A
(b) Both A and R are true, but R does not explain A
(c) A is true, R is false
(d) A is false, R is true

Answer: _____

D. Choose the correct option

11. Which system triggers goosebumps?

(a) digestive
(b) sympathetic nervous system
(c) excretory
(d) skeletal

Answer: _____

12. When the arrector pili contracts, the hair:

(a) falls out
(b) stands upright
(c) turns white
(d) grows longer at once

Answer: _____

13. Raised fur helps an animal in the cold because it:

(a) absorbs water

(b) traps insulating air

(c) produces heat

(d) reflects sunlight

Answer: _____

E. Short answer questions

14. Explain how a goosebump forms.

15. Why did goosebumps help our furry ancestors?

F. Match the columns

16. Match each item in Column A with the correct item in Column B.

Column A	Column B	Your answer
1. Arrector pili	(a) Looking bigger to a threat	1 → ____
2. Adrenaline	(b) Insulation in furry animals	2 → ____
3. Air layer	(c) Muscle that raises the hair	3 → ____
4. Raised fur	(d) Hormone released in fear	4 → ____

Detailed solutions

1. arrector pili

2. involuntary

3. adrenaline

4. air

5. False. It is a smooth, involuntary muscle.

6. True. The sympathetic nervous system responds to cold and emotion.

7. False. Our sparse hair traps very little air.

8. True. This is a defensive display.

9. (a) R explains A.

10. (a) R explains A.

11. (b) sympathetic nervous system. Sympathetic nerves and adrenaline.

12. (b) stands upright. It pulls the follicle upright.

13. (b) traps insulating air. Air is a poor conductor of heat.

14. Cold or fear activates sympathetic nerves and adrenaline. The arrector pili contracts, pulls the slanted hair follicle upright, the hair stands and the skin around it is pushed up into a small bump.

15. Raised fur traps a thicker layer of air, insulating the body from cold, and makes the animal look bigger to scare off threats.

16. 1 → (c), 2 → (d), 3 → (b), 4 → (a). Each term matches its role in goosebumps.