(1) In what direction does the earth's gravity pull things? *(Select the best answer.)*

(A) toward the earth's surface

(B) * toward the center of the earth

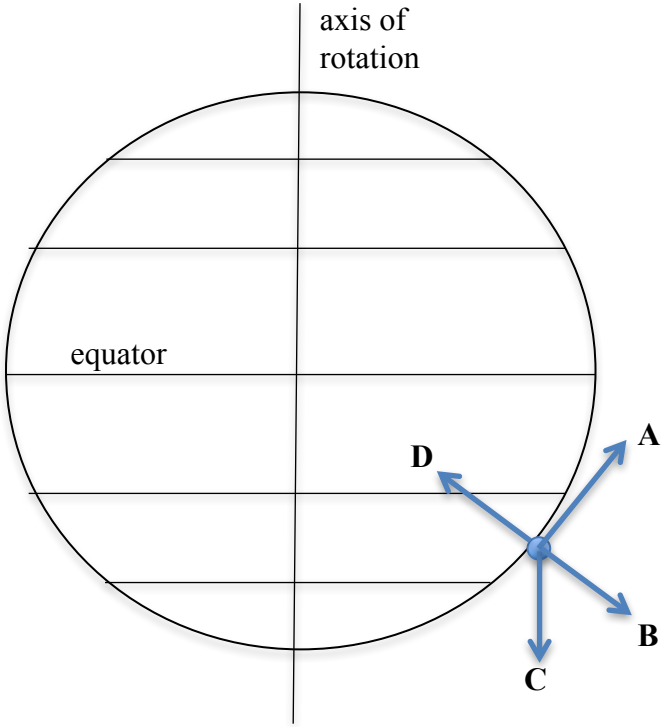
(C) toward the south

(D) down

*Best answer. "Down" is by definition the direction that gravity pulls things, which makes it a circular answer. "Toward the earth's surface" is not a unique direction—many directions would point toward the earth's surface.

(2) In the diagram of the earth below, suppose that you were standing at the location represented by the small blue circle.

At that location, which one of the four labeled directions would be “down”?



(A) **A**

(B) **B**

(C) **C**

(D) * **D**

*Correct answer.
See Question (1).

(3) In what direction is the horizon?

(Select the best answer.)

(A) toward the earth's surface

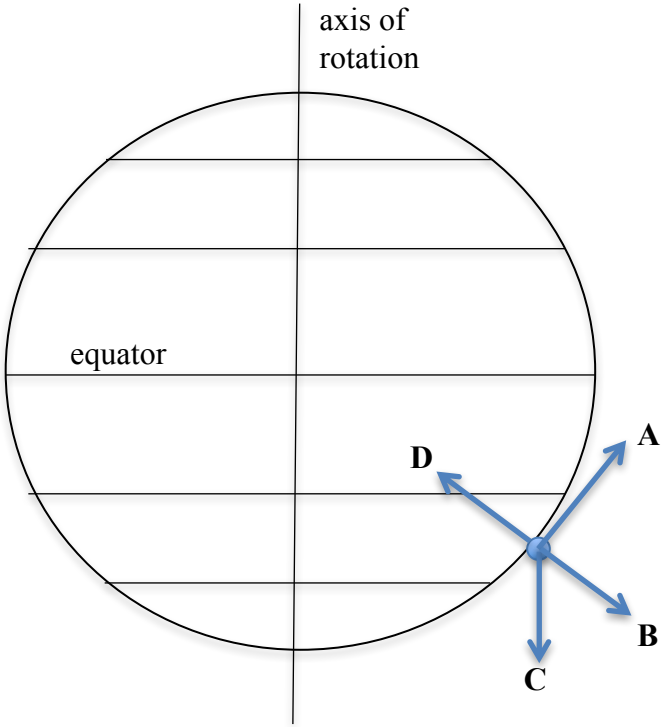
(B) * parallel to the earth's surface (perpendicular to down)

(C) perpendicular to the earth's surface (parallel to down)

(D) toward the south

*Correct answer.

(4) At the same location as in Question (1), which one of the four labeled directions would be a *horizontal* direction (that is, toward a point on the horizon)?



(A) * **A**

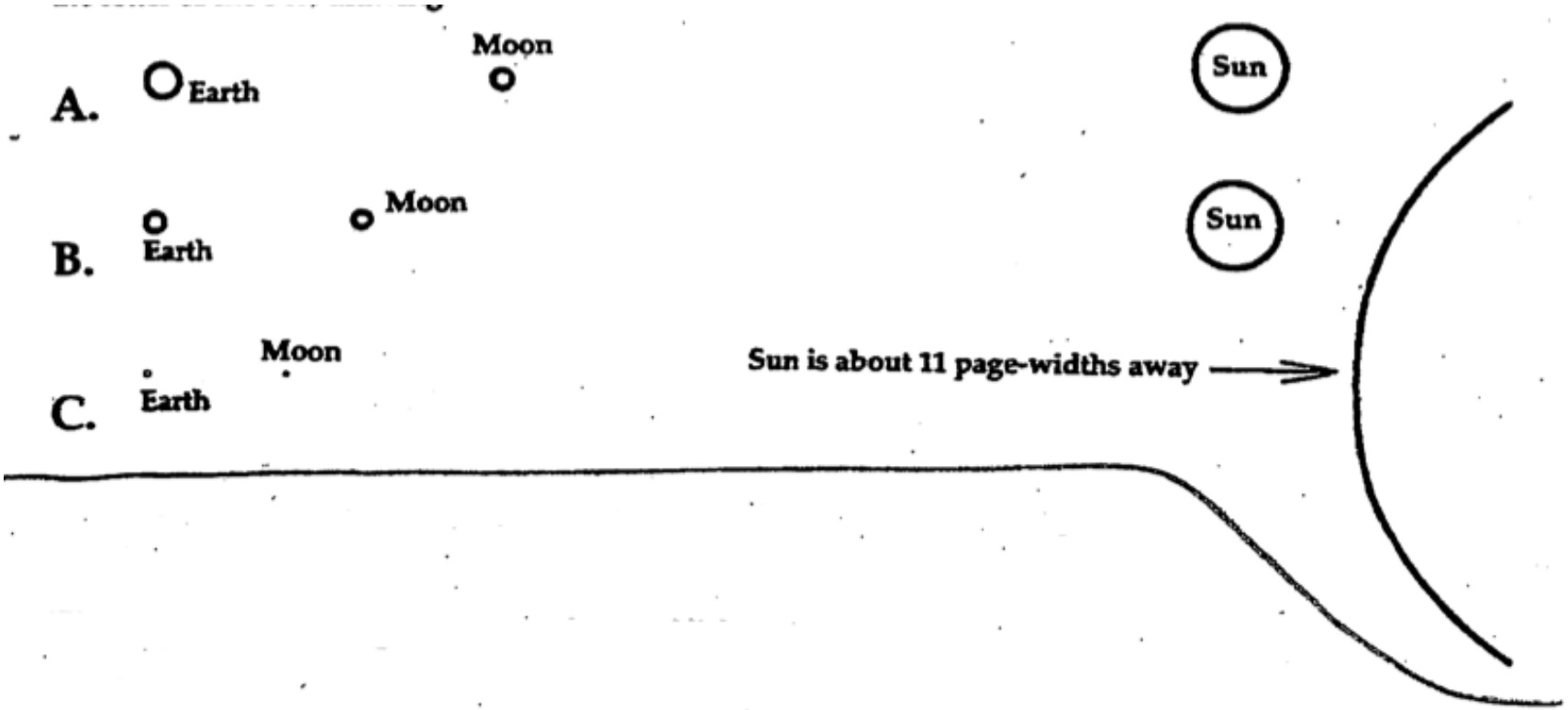
(B) **B**

(C) **C**

(D) **D**

*Correct answer.
See Question (3).

Which of these three drawings do you think most accurately shows the correct sizes and distances between the Earth, the sun, and the moon? *[Correct answer: (C)]*



(5) If the earth and sun (and the distance between them) are drawn to scale on the board 15 ft. apart, what should the diameter of each be?

(A) Earth: 0.0015″, Sun: 0.15″

(B) * Earth: 0.015″, Sun: 1.5″

(C) Earth: 0.15″, Sun: 15″

(D) Earth: 1.5″, Sun: 150″

(E) Smaller than any of these choices

*Closest answer. Can calculate the sizes using a scaling relationship.

(6) When you shine a flashlight on a surface, what happens to the intensity of the light on that surface when you reduce (lower) the angle between the light beam and the surface?

(A)The intensity increases.

(B)* The intensity decreases.

(C)The intensity doesn't change.

*Correct answer. Lowering the angle at which a beam of light strikes a surface causes the light to spread out over a larger area, thereby decreasing it's intensity.