Human Body Systems: Jobs and Teamwork

Grades 6-8

Name _____ Date _____

Directions: Take every system name from the word bank. Use Table 1 for items 4, 5, 6 and 8.

circulatory | **digestive** | **excretory** | **muscular** | **nervous** | **respiratory** | **skeletal**

Chart 1: six jobs, six systems

a	Holds the body up and shields soft organs	→
b	Swaps oxygen and carbon dioxide with air	→
c	Sends fast signals between brain and body	→
d	Breaks a meal down into small molecules	→
e	Filters wastes from blood and makes urine	→
f	Pumps blood that carries supplies to cells	→

Table 1 (SIMULATED data)
one student, three activities

Activity	Heart rate beats/min	Breathing breaths/min
Sitting	68	14
Walking	94	21
Jumping rope	151	36

Table 1 is simulated: nobody was measured, and its six rates were invented for this page.

1. Fill in Chart 1 with systems from the word bank, one in each empty box. One bank word is left over.
2. You bend your elbow to lift a full watering can off the ground. Which two systems in the word bank do the lifting together? Tell what each one does.

3. A growing arm bone is built with calcium that was swallowed in a glass of milk. Name the two systems that bring the calcium to the bone, in the order they act, and tell what each one does to it.

4. Use Table 1. From sitting to walking, the heart rate climbs by _____ beats/min. From walking to jumping rope, it climbs by another _____ beats/min.
5. (a) Jumping rope takes _____ more breaths each minute than sitting. (b) In which activity is the breathing rate exactly 1.5 times the sitting rate? _____
6. Each column of numbers in Table 1 counts the work of one body system. Name the two systems. Then explain why muscles that work harder need both of them to speed up.

7. System for each part: kidney _____ spinal cord _____ biceps _____
8. Table 1 is simulated. Plan how a class could collect real numbers for the same table. Say what the students count, for how long, and at which moments.

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Answer key

Item 1: one point for each box (6). Items 2 and 3: two points each, one for the systems and one for what they do. Items 4, 5 and 7: one point for each blank. Item 6: three points. Item 8: two points.

1. **a skeletal; b respiratory; c nervous; d digestive; e excretory; f circulatory**
   Left over: muscular. Also accept urinary for excretory and cardiovascular for circulatory. Spelling does not cost a point when the system is clear.

2. **Muscular and skeletal. Arm muscles shorten and pull. The arm bones are the stiff bars that the muscles pull on, and the elbow joint lets the arm fold.**
   A student may add that the nervous system tells the muscles when to pull. Give credit for it as an extra, but not in place of either of the two.

3. **Digestive first, then circulatory. Digestion frees the calcium from the milk, and the calcium crosses the gut lining into the blood. Blood pumped by the heart then delivers it to the bone.**
   Order matters: nothing can ride in the blood until digestion has let it through the intestine wall.

4. **26 beats/min; 57 beats/min**
   94 − 68 = 26 and 151 − 94 = 57. The second jump is the bigger one.

5. **(a) 22; (b) walking**
   (a) 36 − 14 = 22. (b) 1.5 × 14 = 21, the walking row.

6. **Heart rate: circulatory. Breathing rate: respiratory. Busy muscle cells use oxygen faster and give off carbon dioxide faster. Quicker breathing trades those gases with the air sooner, and a quicker heartbeat moves the blood between lungs and muscles sooner.**
   Two points for the two systems, one for the reason. The table only shows that the rates rise together; the reason comes from what is known about the body, not from these six numbers.

7. **kidney: excretory; spinal cord: nervous; biceps: muscular**
   Accept urinary for the kidney. A bank word may be needed here that Chart 1 did not use.

8. **Count pulse beats and count breaths, each for one full minute: once while sitting still, then right at the end of the walk and right at the end of the rope jumping.**
   One point for what is counted and for how long, one point for the moments. Accept counting for 30 seconds and doubling, a pulse sensor, or repeating with several students.