

**Concept-Development
Practice Page**

6-1

Newton's Third Law

1. In the example below, the action-reaction pair is shown by the arrows (vectors), and the action-reaction described in words. In (a) through (g) draw the other arrow (vector) and state the reaction to the given action. Then make up your own example in (h).

Example:



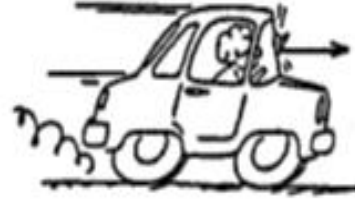
Fist hits wall.

Wall hits fist.



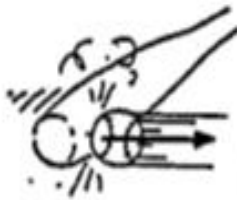
Head bumps ball.

(a) _____



Windshield hits bug.

(b) _____



Bat hits ball.

(c) _____



Hand touches nose.

(d) _____



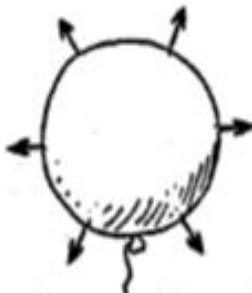
Hand pulls on flower.

(e) _____



Athlete pushes bar upward.

(f) _____

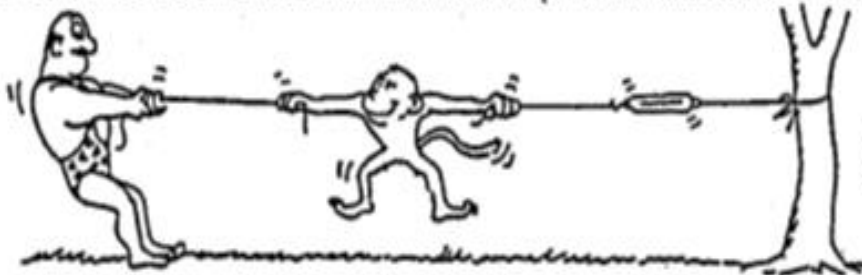


Compressed air pushes balloon surface outward.

(g) _____

(h) _____

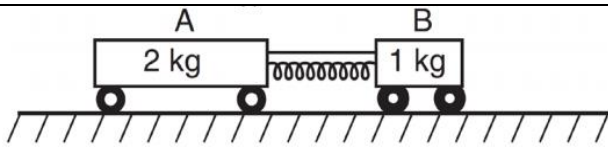
2. Draw arrows to show the chain of at least six pairs of action-reaction forces below.



YOU CAN'T TOUCH WITHOUT BEING TOUCHED—
NEWTON'S THIRD LAW



Newton's 3rd Law Worksheet



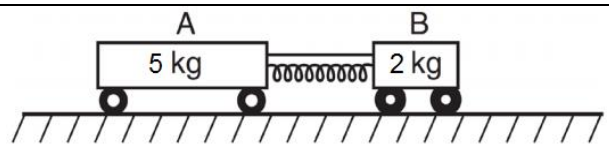
3. The diagram above shows a compressed spring between two carts initially at rest on a horizontal, frictionless surface. Cart A has a mass of 2 kilograms and cart B has a mass of 1 kilogram. A string holds the carts together. The string is cut and the carts move apart. The force applied by the spring is 5N to the 1 kg cart. Determine the rest of the values below.

Force on cart B = _____ right or left?

Force on cart A = _____ right or left?

Acceleration of cart B = _____ right or left?

Acceleration of cart A = _____ right or left?



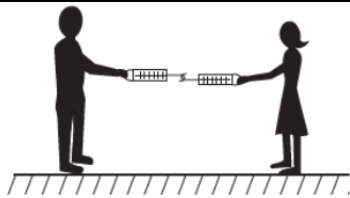
4. The diagram below shows a compressed spring between two carts initially at rest on a horizontal, frictionless surface. Cart A has a mass of 5 kg and cart B has a mass of 2 kg. A string holds the carts together. The string is cut and the carts move apart. The acceleration of cart B after the spring is released is 4 m/s^2 . Determine the rest of the values below.

Force on cart B = _____ right or left?

Force on cart A = _____ right or left?

Acceleration of cart B = _____ right or left?

Acceleration of cart A = _____ right or left?



5. A 50 kg boy and a 25 kg girl are standing on ice skates on near frictionless ice. The two are facing each other and they attach two spring scales together. The boy **pulls** on his spring scale with a force of 20 N. Determine the rest of the values below.

Force on boy = _____ right or left?

Force on girl = _____ right or left?

Acceleration of boy = _____ right or left?

Acceleration of girl = _____ right or left?

6. A 3.80 kg rifle fires a 0.004 kg bullet. The acceleration of the rifle is 200 m/s^2 . Draw the diagram in the space above and determine the rest of the values below.

Force on gun = _____ right or left?

Force on bullet = _____ right or left?

Acceleration of gun = _____ right or left?

Acceleration of bullet = _____ right or left?

