Newton's 3rd Law Worksheet

Physics Name _____ Period_____

Choose the best answer for each question from the choices below. *Be clear about which answer you are circling—none of this trying to circle 2 answers and be sloppy so I'll just count it correct* ☺ And then explain why you have chosen the answer you chose. Good Luck!!!

1. Newton's 3rd Law states…
   a. Objects in motion stay in motion and objects at rest stay at rest
   b. Force is equal to mass times acceleration
   c. For each action there is an equal and opposite reaction

Why???_____

2. An archer shoots an arrow. The action force is the bowstring against the arrow, The reaction force is…
   a. Air resistance against the bow
   b. Arrow's push against the bowstring
   c. Grip of the archer's hand on the bow

Why???_____

3. A player catches a ball. The action force is the impact of the ball against the player's glove. The reaction force is…
   a. The force the glove exerts on the ball
   b. The player's grip on the glove
   c. The friction of the ground on the player's shoes

Why???_____

4. A player hits a ball with a bat. The action force is the impact of the bat against the ball. The reaction force is…
   a. The grip of the player's hands on the ball
   b. The air resistance on the ball
   c. The force of the ball against the bat

Why???_____

5. A baseball player bats a ball with a force of 1,000 N. The ball exerts a reaction force against the bat of…
   a. Less than 1,000 N
   b. More than 1,000 N
   c. 1,000 N

Why???_____

6. A person is attracted toward the center of the Earth by a 500 N gravitational force. The force that the Earth is attracted toward the person is…
   a. 500 N
   b. Much less than 500 N
   c. Much more than 500 N

Why???_____

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Physics Name _____ Period_____

Choose the best answer for each question from the choices below. *Be clear about which answer you are circling—none of this trying to circle 2 answers and be sloppy so I'll just count it correct* ☺ And then explain why you have chosen the answer you chose. Good Luck!!!

Two objects
Two forces
- action
- reaction

1. Newton's 3rd Law states…
   a. Objects in motion stay in motion and objects at rest stay at rest - 1st
   b. Force is equal to mass times acceleration - 2nd
   (c.) For each action there is an equal and opposite reaction - 3rd

Why??? 3rd Law involves = and opposite reaction

2. An archer shoots an arrow. The action force is the bowstring against the arrow, The reaction force is…
   a. Air resistance against the bow
   (b.) Arrow's push against the bowstring
   c. Grip of the archer's hand on the bow

Why??? - if bow string applies force to arrow; arrow = opposite on bow string

3. A player catches a ball. The action force is the impact of the ball against the player's glove. The reaction force is…
   (a.) The force the glove exerts on the ball
   b. The player's grip on the glove
   c. The friction of the ground on the player's shoes

Why??? Action Force ball to glove Reaction Force - glove to ball

4. A player hits a ball with a bat. The action force is the impact of the bat against the ball. The reaction force is…
   a. The grip of the player's hands on the ball
   b. The air resistance on the ball
   (c.) The force of the ball against the bat

Why??? Action force is ball to bat, Reaction force bat to ball

5. A baseball player bats a ball with a force of 1,000 N. The ball exerts a reaction force against the bat of…
   a. Less than 1,000 N
   b. More than 1,000 N
   (c.) 1,000 N

Why??? Forces are equal and opposite

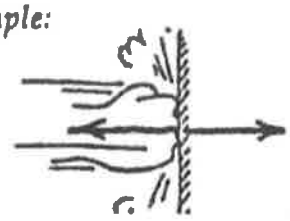
6. A person is attracted toward the center of the Earth by a 500 N gravitational force. The force that the Earth is attracted toward the person is…
   (a.) 500 N
   b. Much less than 500 N
   c. Much more than 500 N

Why??? Force is equal and opposite

Chapter 5 Newton's Third Law of Motion
Action and Reaction Pairs

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.

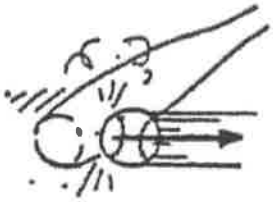
Wall hits fist.

Head bumps ball.

(*a*)_____

Windshield hits bug.

(*b*)_____



Bat hits ball.

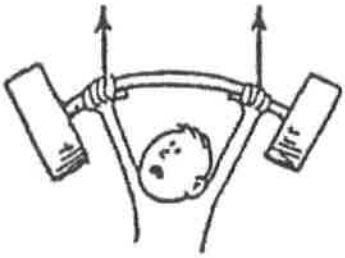
(*c*)_____

Hand touches nose.

(*d*)_____

Hand pulls on flower.

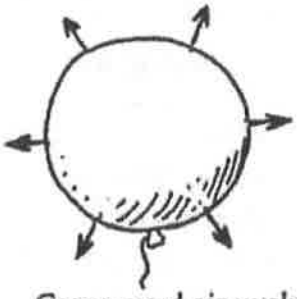
(*e*)_____



Athlete pushes bar upward.

(*f*)_____

_____



Compressed air pushes balloon surface outward.

(*g*)_____

_____

(*h*)_____

_____

_____

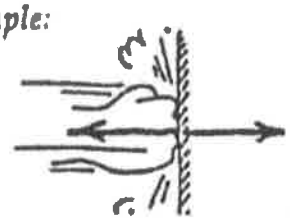
_____

Chapter 5 Newton's Third Law of Motion

Action and Reaction Pairs

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.

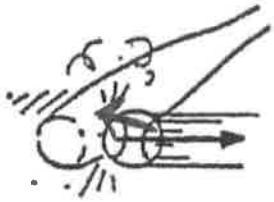
Wall hits fist.

Head bumps ball.

(a) ball hits head

Windshield hits bug.

(b) bug hits windshield



Bat hits ball.

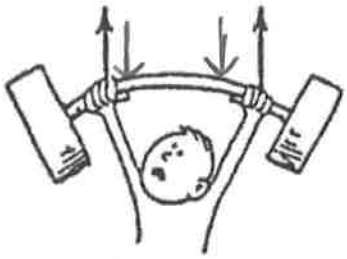
(c) ball hits bat

Hand touches nose.

(d) Nose touches hand

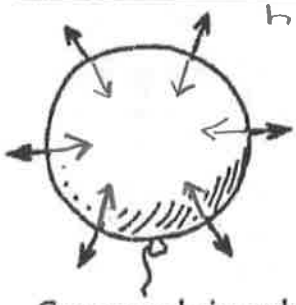
Hand pulls on flower.

(e) flower exerts force on hand



Athlete pushes bar upward.

(f) bar pushes down with a forces



Compressed air pushes balloon surface outward.

(g) Balloon pushes IN

(h) _____