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Check for  
**UNDERSTANDING**

# NEWTON'S 3RD LAW OF MOTION

Can you find the pairs which aren't best? Decide whether the following are true or false.

**SPIN THE GEARS**

Newton's 3<sup>rd</sup> Law of Motion informs us that any action undertaken will result in an opposite and equal action.

**a** True or False? Explain.

---

**b** Forces occur in pairs, **action** and **reaction**. When a moving ball collides (action) into a stationary one, both move (reaction).

**c** True or False? Explain.

---

**d** When rowing a boat, you are pushing the paddles forward, so you move forward.

**KNOW BY SIGHT**

Can you identify examples? Cross out the following two examples of incorrect ones.



✓



✓



✓

**PUZZLE IT OUT**

Can you match each puzzle piece? Connect the terms to the definitions. Match out like a monkey!

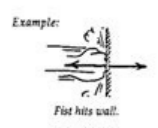
# Equal	A	1	A path or course showing tendency or facing.	#
# Opposite	B	2	A push or pull acted upon an object.	#
# Direction	C	3		#
# 3 <sup>rd</sup> Law	D	4	Being the same in quantity, size, degree or value.	#
# Force	E	5	Contrary, in a complementary role; opposing.	#

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_


### Net Force Worksheet 5: Newton's Third Law

1. In the example below, the action-reaction pair is shown by the arrows (reactors), and the action-reaction pair is shown by the arrows (reactors) and the action-reaction pair is shown by the arrows (reactors) and the action-reaction pair is shown by the arrows (reactors). Then make up your own example in 10s.


**Example**



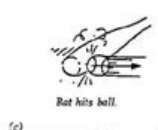
Foot hits wall.




Foot bumps ball.




Hand hits ball.




Hand pushes wall.



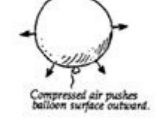
Hand pushes rock.



Hand pushes door.

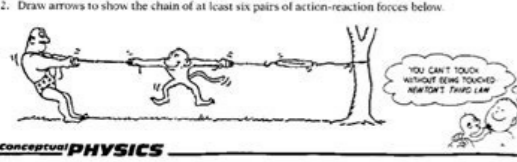


Adding forces for opposite direction.



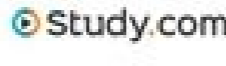
Adding forces for same direction.

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



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### Quiz & Worksheet - Newton's 3 Laws of Motion Facts for Kids

- Which is Newton most famous for studying? (Some say he thought a lot about it when an apple fell on his head!)
  - Plant growth
  - The atmosphere
  - Gravity
  - The ocean
- \_\_\_ is a push or pull that makes something move or stop moving.
  - Force
  - Friction
  - Gravity
  - Weight
- Which example describes Newton's First Law of Motion?
  - Two people sitting in rolling chairs push off of each other and move in opposite directions.
  - An object flying through space will continue moving until gravity pulls it down to a planet.
  - A hot cup of coffee stays hot longer than a chunk of glass the same size.
  - A person can push on a wall with much greater force than a feather because the feather is much smaller.


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### Newton's Laws of Motion Worksheet

Isaac Newton (1642-1727) was a scientist who discovered three laws of motion.

The first law, known as the Law of Inertia, states that an object at rest stays at rest and an object in uniform motion stays in uniform motion unless acted upon by an external force.

The second law, in simple terms, states that Force is equal to Mass x Acceleration, or  $F = ma$ .

The third law states for every action there is an equal and opposite reaction.

Find examples for each of these laws in sport.

First law	Second law	Third law
_____	_____	_____
_____	_____	_____
_____	_____	_____

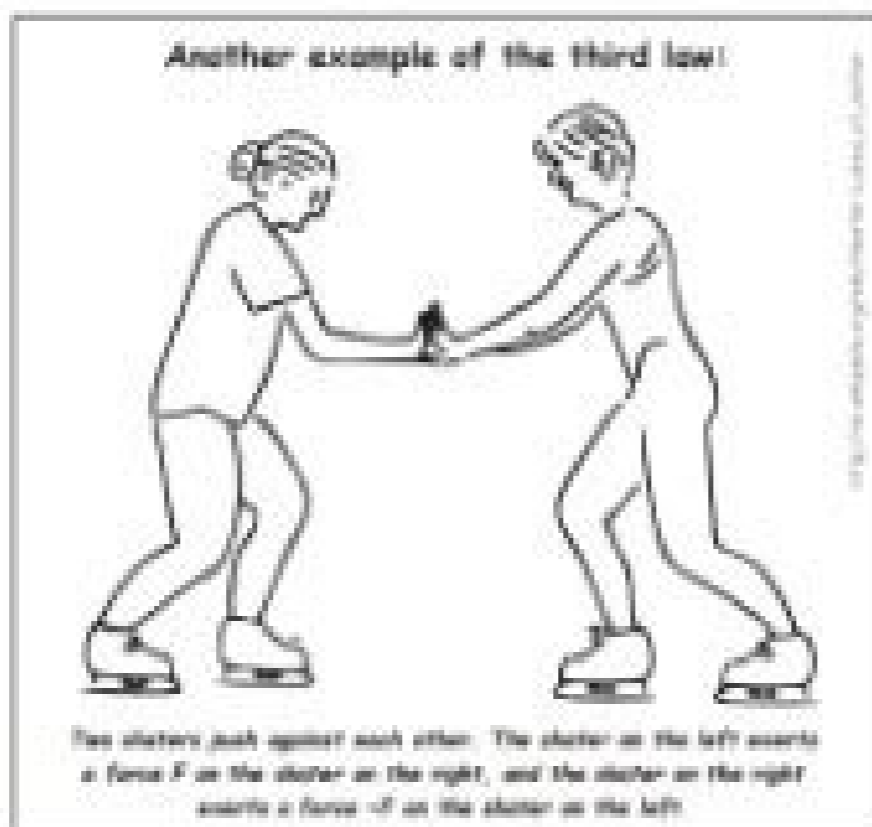
Demonstrate the third law.

What you need

- Two rulers
- Six 20-cent coins
- Masking tape

What to do

1. Lay the rulers parallel on a flat surface with four coins in a line and touching each other in between each ruler.
2. Tape the rulers to the surface.
3. Using your finger, push one 20-cent coin on to the edge of the first of the four coins. What happens?
4. Push two 20-cent coins on to the line of four coins. What happens?
5. Explain the results below:



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Cut out each of the squares below. Glue them on the correct left page of your flipbook and add information when possible.

<p>These forces are balanced.</p>	<p>The tennis player hits the ball with a force of 200 N. The mass of the ball is 0.05 kg. Find the acceleration of the ball in <math>m/s^2</math>. Show your work.</p>
<p>A force of 10N is applied to each of these objects.</p> <p>When equal forces are applied to objects, which object will have the least acceleration? Explain.</p>	<p>Friction is an unbalanced force that opposes motion between objects that are touching.</p>
<p>How much force is required to accelerate a 1 kg object at a rate of 5 <math>m/s^2</math> forward and backward in your answer.</p>	<p>You must pull a large rock with more force than a small rock.</p>
<p>The hammer pushes the nail downward, while the nail exerts a force upward on the hammer.</p>	<p>These forces are unbalanced.</p>

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Cut out each of the squares below. Sort the cards based on whether they are examples of Newton's 1st Law, 2nd Law, or 3rd Law of Motion. Glue the cards on the last page of your flipbook.

<p>A golf ball sitting on a tee.</p>	<p>Kicking a soccer ball to make it go faster.</p>
<p>Hitting a hockey puck to make it accelerate.</p>	<p>The teacher on the left pushes the ball with the left hand, and the student on the right pushes it with the right hand.</p>
<p>The ball sits at rest until the man kicked it.</p>	<p>The ball sits at rest until the man kicked it.</p>
<p>The car is moving at a constant speed.</p>	<p>A person is pushing a cart.</p>

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Newton's three laws of motion worksheet answer key. Three laws of motion worksheet pdf. Isaac newton's three laws of motion worksheet. Newton's three laws of motion worksheet answers.

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