Lesson: Balloon Rocket Science	Name:
Teacher:	Date:

1. Choose the correct word to complete the sentence. When the balloon is let go, the air rushing out causes the balloon to move in the _____ direction.

   a) same
   b) opposite
   c) forward
   d) random

2. Choose the correct word to complete the sentence. The energy stored inside the blown-up balloon is called _____ energy.

   a) potential
   b) electrical
   c) kinetic
   d) thermal

3. Select all words that correctly complete the sentence. Newton's Third Law says that every action has an _____ and _____ reaction.

   a) equal
   b) string
   c) inflate
   d) reaction
   e) opposite

4. Choose the correct word to complete the sentence. To make the balloon rocket travel farther, you can _____ the balloon with more air.

   a) inflate
   b) spin
   c) deflate
   d) stretch

5. Choose the correct word to complete the sentence. It is important to keep the _____ tight so the balloon rocket moves straight.

   a) string
   b) straw
   c) tape
   d) balloon

6. Choose the correct answer from the choices. What principle is shown by the balloon rocket experiment?

   a) Newton's Third Law of Motion
   b) Hooke's Law
   c) Law of Conservation of Mass
   d) Law of Gravity

7. Choose the correct answer from the choices. What happens to the balloon when the air is released?

   a) It stays still
   b) It moves in the opposite direction
   c) It pops
   d) It gets bigger

8. Choose the correct answer from the choices. What kind of energy does a blown-up balloon have before it is released?

   a) Kinetic energy
   b) Potential energy
   c) Chemical energy
   d) Electrical energy

9. Choose the correct answer from the choices. Which of these would help the balloon rocket travel faster?

   a) Adding more tape to the straw
   b) Making the string loose
   c) Using less air in the balloon
   d) Inflating the balloon more

10. Choose the correct answer from the choices. What is an example of an action-reaction pair in the experiment?

    a) Measuring the string
    b) Balloon taped to straw
    c) Air leaving the balloon and balloon moving
    d) Tying the balloon

11. Choose the option that best describes what you see when you release the balloon rocket on the string.

    a) It moves along the string in the opposite direction of the escaping air.
    b) It falls off the string and drops to the floor.
    c) It moves toward the end where the air is exiting.
    d) It hangs still on the string without moving.

12. Why is it important to keep the string tight during the experiment?

a) To keep the path straight and reduce friction from slack
b) To make the balloon get bigger
c) To slow the balloon down for safety
d) To keep the tape sticking to the straw

13. Which real-life situation shows Newton's Third Law (action-reaction) outside of the balloon experiment?

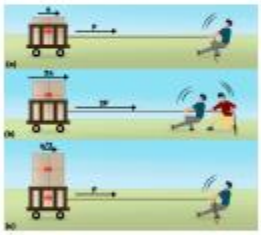
a) Turning on a light switch
b) Mixing two paint colors
c) A swimmer pushes water backward and moves forward
d) A plant growing toward sunlight

14. 

Match Newton's laws with the description that best fits it.

For every applied Force, there is an equal and opposite reactive Force.	○ Newton's 1st Law
An object at rest and an object in motion will both maintain a constant state of motion - unless acted upon by an unbalanced force.	○ Newton's 3rd Law
The **acceleration** of a **mass** is proportional to the **Net Force** acting on it	○ Newton's 2nd Law

15. Match the following laws of motion to their pictures



- 1st Law: Inertia
- 2nd Law: F=ma
- 3rd Law: Action/Reaction

Answer Keys

1. b) opposite
2. a) potential
3. a) equal , e) opposite
4. a) inflate
5. a) string
6. a) Newton's Third Law of Motion
7. b) It moves in the opposite direction
8. b) Potential energy
9. d) Inflating the balloon more
10. c) Air leaving the balloon and balloon moving
11. a) It moves along the string in the opposite direction of the escaping air.
12. a) To keep the path straight and reduce friction from slack
13. c) A swimmer pushes water backward and moves forward
14. An object at rest and an object in motion will both maintain a constant state of motion - unless acted upon by an unbalanced force. - Newton's 1st Law,
For every applied Force, there is an equal and opposite reactive Force. - Newton's 3rd Law,
The **acceleration** of a **mass** is proportional to the **Net Force** acting on it - Newton's 2nd Law
15. - 1st Law: Inertia, -

    2nd Law: F=ma, -

    3rd Law: Action/Reaction