# Finding Net Force

**Circle the best answer**

1. The forces shown are PUSHING / PULLING force.
2. The forces shown are WORKING TOGETHER / OPPOSITE forces.
3. The forces are **EQUAL / NOT EQUAL**.
4. The forces **DO / DO NOT** balance each other.
5. The resultant force is 1000 N TO THE RIGHT / 1000 N TO THE LEFT / ZERO.
6. There is / IS NO motion.

**Use this picture for #1-6**

7. The forces shown are PUSHING / PULLING forces.
8. The forces shown are WORKING TOGETHER / OPPOSITE FORCES.
9. The forces are **EQUAL / NOT EQUAL**.
10. The forces **DO / DO NOT** balance each other.
11. The stronger force is pulling to the RIGHT / LEFT.
12. The weaker force is pulling to the RIGHT / LEFT.
13. Motion is to the RIGHT / LEFT.

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For each of the problems below, give the MAGNITUDE of the force and its DIRECTION.

<table>
<thead>
<tr>
<th><strong>Example</strong></th>
<th><strong>ADD</strong></th>
<th><strong>SUBTRACT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="example" alt="Diagram" /></td>
<td><img src="add" alt="Diagram" /></td>
<td><img src="subtract" alt="Diagram" /></td>
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<tr>
<td>Pushing 39 N</td>
<td>Pushing 29 N + Pulling 65 N</td>
<td>Pulling 23 N - Pulling 41 N</td>
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<tr>
<td>Pushing 22 N</td>
<td><strong>Net Force = 61 N</strong></td>
<td><strong>Net Force = 18 N</strong></td>
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<td></td>
<td><strong>Net Force = 94 N</strong></td>
<td><strong>Net Force = 4.9 N</strong></td>
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<tr>
<td>Pushing 12.5 N + Pulling 17.4 N</td>
<td>Pulling 76 N - Pulling 61 N</td>
</tr>
<tr>
<td><strong>Net Force = 15 N</strong></td>
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7. Are the forces above BALANCED or UNBALANCED? **UNBALANCED**
**RESULTANT VELOCITY**

**CIRCLE YOUR ANSWER!**

8. A plane flying 450 mph is traveling with the wind. The wind current is 50 mph. What is the resultant velocity?

![Plane with wind diagram]

\[450 \text{ mph} + 50 \text{ mph} = 500 \text{ mph with the wind}\]

9. A plane flying 450 mph is traveling against the wind. The wind current is 70 mph. What is the resultant velocity?

![Plane against wind diagram]

\[450 \text{ mph} - 70 \text{ mph} = 380 \text{ mph against the wind}\]

10. Evan rows his boat down a river with the current. If Evan rows at a speed of 4 m/s and the river current is 3 m/s, what is the resultant velocity?

![Boat with current diagram]

\[4 \text{ m/s} + 3 \text{ m/s} = 7 \text{ m/s with the current}\]

11. You are on a bullet train going North, which has a velocity of 200 mph. If you walk out of your seat at a speed of 3 mph going North, what is your resultant velocity?

![Train with pedestrian diagram]

\[200 \text{ mph North} + 3 \text{ mph North} = 203 \text{ mph North}\]

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**NET FORCE**

**EXAMPLES**

![Tug of war diagram]

\[1500 \text{ N} + 2000 \text{ N} + 2500 \text{ N} + 1500 \text{ N} + 2000 \text{ N} = 9500 \text{ N}\]

\[1500 \text{ N} - 1000 \text{ N} = 500 \text{ N}\]

**PRACTICE PROBLEMS**

Find the net force for the given problems.

a. 10 N → and 15 N → = 25 N Which direction? →

b. 20 N ← and 60 N ← = 40 N Which direction? ←

c. 30 N → and 20 N ← = 10 N Which direction? →

d. 40 N ← and 50 N ← = 90 N Which direction? ←

e. 70 N down and 30 N up = 40 N Which direction? ▼
**DETERMINING NET FORCE**

**Directions:**
1. Write the correct net force equation for each picture.
2. Solve, and determine the direction of motion.
3. Determine if the forces are balanced or unbalanced and circle the word.

**Tip:** When determining Balanced or Unbalanced forces, the LENGTH of the ARROWS matter!

**Longer Arrows = Greater Force**

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**Example**

- 250 N

**Net Force:**

\[300\, \text{N} - 250\, \text{N} = 50\, \text{N}\]

**Circle One:** Balanced or Unbalanced

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**Net Force:**

\[20,000\, \text{N} - 15,000\, \text{N} = 5,000\, \text{N}\]

**Circle One:** Balanced or Unbalanced

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**Net Force:**

\[5,000\, \text{N} + 4,500\, \text{N} + 6,300\, \text{N} = 15,800\, \text{N} - 8,200\, \text{N}\]

**Circle One:** Balanced or Unbalanced

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**Net Force:**

\[8,200\, \text{N} + 1,000\, \text{N} + 500\, \text{N} + 750\, \text{N} + 1,200\, \text{N} + 1,000\, \text{N}\]

**Circle One:** Balanced or Unbalanced

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\[3,950\, \text{N} - 2,750\, \text{N} = 1,200\, \text{N}\]