Fnet = m•a

NOTE: These questions are representative of the types of values students will be presented with. Actual values are randomly selected from a narrow set of possibilities.

Apprentice Level
Question Group 1
Question 1:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 1.0-kg object to have an eastward acceleration of 2.0 m/s/s.

Question 2:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 1.0-kg object to have a westward acceleration of 2.0 m/s/s.

Question 3:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 1.0-kg object to have a northward acceleration of 3.0 m/s/s.

Question 4:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 1.0-k gobject to have a southward acceleration of 2.0 m/s/s.

Question Group 2
Question 5:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 1.0-kg object to have an eastward acceleration of 4.0 m/s/s.

Question 6:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 1.0-kg object to have a westward acceleration of 4.0 m/s/s.

Question 7:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 1.0-kg object to have a northward acceleration of 4.0 m/s/s.

Question 8:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 1.0-kg object to have a southward acceleration of 4.0 m/s/s.

Question Group 3
Question 9:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 1.0-kg object to have an eastward acceleration of 6.0 m/s/s.

Question 10:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 1.0-kg object to have a westward acceleration of 6.0 m/s/s.

Question 11:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 1.0-kg object to have a northward acceleration of 6.0 m/s/s.

Question 12:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 1.0-kg object to have a southward acceleration of 6.0 m/s/s.

Master Level
Question Group 4
Question 13:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 2.0-kg object to have an eastward acceleration of 3.0 m/s/s.

Question 14:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 2.0-kg object to have a westward acceleration of 3.0 m/s/s.

Question 15:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 3.0-kg object to have a northward acceleration of 2.0 m/s/s.

Question 16:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 3.0-kg object to have a southward acceleration of 2.0 m/s/s.

Question Group 5
Question 17:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 4.0-kg object to have an eastward acceleration of 2.0 m/s/s.

Question 18:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 2.0-kg object to have a westward acceleration of 4.0 m/s/s.

Question 19:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 4.0-kg object to have a northward acceleration of 2.0 m/s/s.

Question 20:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 2.0-kg object to have a southward acceleration of 4.0 m/s/s.

Question Group 6
Question 21:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 3.0-kg object to have an eastward acceleration of 4.0 m/s/s.

Question 22:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 4.0-kg object to have a westward acceleration of 3.0 m/s/s.

Question 23:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 3.0-kg object to have a northward acceleration of 4.0 m/s/s.

Question 24:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 4.0-kg object to have a southward acceleration of 3.0 m/s/s.

Wizard Level
Question Group 7
Question 25:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 2.0-kg object to have an eastward acceleration of 5.0 m/s/s and a northward acceleration of 3.0 m/s/s.

Question 26:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 2.0-kg object to have a westward acceleration of 5.0 m/s/s and a southward acceleration of 3.0 m/s/s.

Question 27:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 2.0-kg object to have an eastward acceleration of 3.0 m/s/s and a southward acceleration of 5.0 m/s/s.

Question 28:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 2.0-kg object to have a westward acceleration of 3.0 m/s/s and a northward acceleration of 5.0 m/s/s.

Question Group 8

Question 29:

Adjust the two east-west and two north-south forces of the Force Diagram in order for the 3.0-kg object to have an eastward acceleration of 2.0 m/s/s and a northward acceleration of 4.0 m/s/s.

Question 30:

Adjust the two east-west and two north-south forces of the Force Diagram in order for the 3.0-kg object to have a westward acceleration of 2.0 m/s/s and a southward acceleration of 4.0 m/s/s.

Question 31:

Adjust the two east-west and two north-south forces of the Force Diagram in order for the 3.0-kg object to have an eastward acceleration of 4.0 m/s/s and a southward acceleration of 2.0 m/s/s.

Question 32:

Adjust the two east-west and two north-south forces of the Force Diagram in order for the 3.0-kg object to have a westward acceleration of 4.0 m/s/s and a northward acceleration of 2.0 m/s/s.

Question Group 9

Question 33:

Adjust the two east-west and two north-south forces of the Force Diagram in order for the 4.0-kg object to have an eastward acceleration of 3.0 m/s/s and a northward acceleration of 1.0 m/s/s.

Question 34:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 4.0-kg object to have a westward acceleration of 3.0 m/s/s and a southward acceleration of 1.0 m/s/s.

Question 35:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 4.0-kg object to have an eastward acceleration of 1.0 m/s/s and a southward acceleration of 3.0 m/s/s.

Question 36:
Adjust the two east-west and two north-south forces of the Force Diagram in order for the 4.0-kg object to have a westward acceleration of 1.0 m/s/s and a northward acceleration of 3.0 m/s/s.