

Newton's Law of Universal Gravitation

Activity 1: The Mass Attraction

Question Group 1

Question 1

Objects 1 and 2 attract each other with a gravitational force of 18.0 units. If the mass of Object 1 is doubled, then the new gravitational force will be _____ units.

Question 2

Objects 1 and 2 attract each other with a gravitational force of 36.0 units. If the mass of Object 1 is doubled, then the new gravitational force will be _____ units.

Question 3

Objects 1 and 2 attract each other with a gravitational force of 72.0 units. If the mass of Object 1 is doubled, then the new gravitational force will be _____ units.

Question Group 2

Question 4

Objects 1 and 2 attract each other with a gravitational force of 18.0 units. If the mass of Object 2 is tripled, then the new gravitational force will be _____ units.

Question 5

Objects 1 and 2 attract each other with a gravitational force of 36.0 units. If the mass of Object 2 is tripled, then the new gravitational force will be _____ units.

Question 6

Objects 1 and 2 attract each other with a gravitational force of 72.0 units. If the mass of Object 2 is tripled, then the new gravitational force will be _____ units.

Question Group 3

Question 7

Objects 1 and 2 attract each other with a gravitational force of 18.0 units. If the mass of Object 1 is halved, then the new gravitational force will be _____ units.

Question 8

Objects 1 and 2 attract each other with a gravitational force of 36.0 units. If the mass of Object 1 is halved, then the new gravitational force will be _____ units.

Question 9

Objects 1 and 2 attract each other with a gravitational force of 72.0 units. If the mass of Object 1 is halved, then the new gravitational force will be _____ units.

Question Group 4**Question 10**

Objects 1 and 2 attract each other with a gravitational force of 18.0 units. If the mass of Object 1 is doubled AND the mass of object 2 is tripled, then the new gravitational force will be _____ units.

Question 11

Objects 1 and 2 attract each other with a gravitational force of 36.0 units. If the mass of Object 1 is doubled AND the mass of object 2 is tripled, then the new gravitational force will be _____ units.

Question 12

Objects 1 and 2 attract each other with a gravitational force of 72.0 units. If the mass of Object 1 is doubled AND the mass of object 2 is tripled, then the new gravitational force will be _____ units.

Question Group 5**Question 13**

Objects 1 and 2 attract each other with a gravitational force of 18.0 units. If the mass of Object 1 is halved AND the mass of object 2 is tripled, then the new gravitational force will be _____ units.

Question 14

Objects 1 and 2 attract each other with a gravitational force of 36.0 units. If the mass of Object 1 is halved AND the mass of object 2 is tripled, then the new gravitational force will be _____ units.

Question 15

Objects 1 and 2 attract each other with a gravitational force of 72.0 units. If the mass of Object 1 is halved AND the mass of object 2 is tripled, then the new gravitational force will be _____ units.

Activity 2: Diluted by Distance**Question Group 6****Question 16**

Objects 1 and 2 attract each other with a gravitational force of 18.0 units. If the distance separating Objects 1 and 2 is doubled, then the new gravitational force will be _____ units.

Question 17

Objects 1 and 2 attract each other with a gravitational force of 36.0 units. If the distance separating Objects 1 and 2 is doubled, then the new gravitational force will be _____ units.

Question 18

Objects 1 and 2 attract each other with a gravitational force of 72.0 units. If the distance separating Objects 1 and 2 is doubled, then the new gravitational force will be _____ units.

Question Group 7**Question 19**

Objects 1 and 2 attract each other with a gravitational force of 18.0 units. If the distance separating Objects 1 and 2 is tripled, then the new gravitational force will be _____ units.

Question 20

Objects 1 and 2 attract each other with a gravitational force of 36.0 units. If the distance separating Objects 1 and 2 is tripled, then the new gravitational force will be _____ units.

Question 21

Objects 1 and 2 attract each other with a gravitational force of 72.0 units. If the distance separating Objects 1 and 2 is tripled, then the new gravitational force will be _____ units.

Question Group 8

Question 22

Objects 1 and 2 attract each other with a gravitational force of 18.0 units. If the distance separating Objects 1 and 2 is changed to one-half the original value (i.e., halved), then the new gravitational force will be _____ units.

Question 23

Objects 1 and 2 attract each other with a gravitational force of 36.0 units. If the distance separating Objects 1 and 2 is changed to one-half the original value (i.e., halved), then the new gravitational force will be _____ units.

Question 24

Objects 1 and 2 attract each other with a gravitational force of 72.0 units. If the distance separating Objects 1 and 2 is changed to one-half the original value (i.e., halved), then the new gravitational force will be _____ units.

Question Group 9

Question 25

Objects 1 and 2 attract each other with a gravitational force of 18.0 units. If the distance separating Objects 1 and 2 is changed to one-third the original value, then the new gravitational force will be _____ units.

Question 26

Objects 1 and 2 attract each other with a gravitational force of 36.0 units. If the distance separating Objects 1 and 2 is changed to one-third the original value, then the new gravitational force will be _____ units.

Question 27

Objects 1 and 2 attract each other with a gravitational force of 72.0 units. If the distance separating Objects 1 and 2 is changed to one-third the original value, then the new gravitational force will be _____ units.

Question Group 10

Question 28

Objects 1 and 2 attract each other with a gravitational force of 18.0 units. If the distance separating Objects 1 and 2 is changed to four times the original value (i.e., quadrupled), then the new gravitational force will be _____ units.

Question 29

Objects 1 and 2 attract each other with a gravitational force of 36.0 units. If the distance separating Objects 1 and 2 is changed to four times the original value (i.e., quadrupled), then the new gravitational force will be _____ units.

Question 30

Objects 1 and 2 attract each other with a gravitational force of 72.0 units. If the distance separating Objects 1 and 2 is changed to four times the original value (i.e., quadrupled), then the new gravitational force will be _____ units.

Activity 3: Putting it All Together

Question Group 11

Question 31

Objects 1 and 2 attract each other with a gravitational force of 18.0 units. If the mass of Object 1 is doubled AND the distance separating Objects 1 and 2 is tripled, then the new gravitational force will be _____ units.

Question 32

Objects 1 and 2 attract each other with a gravitational force of 36.0 units. If the mass of Object 1 is doubled AND the distance separating Objects 1 and 2 is tripled, then the new gravitational force will be _____ units.

Question 33

Objects 1 and 2 attract each other with a gravitational force of 72.0 units. If the mass of Object 1 is doubled AND the distance separating Objects 1 and 2 is tripled, then the new gravitational force will be _____ units.

Question Group 12

Question 34

Objects 1 and 2 attract each other with a gravitational force of 18.0 units. If the mass of Object 2 is tripled AND the distance separating Objects 1 and 2 is doubled, then the new gravitational force will be _____ units.

Question 35

Objects 1 and 2 attract each other with a gravitational force of 36.0 units. If the mass of Object 2 is tripled AND the distance separating Objects 1 and 2 is doubled, then the new gravitational force will be _____ units.

Question 36

Objects 1 and 2 attract each other with a gravitational force of 72.0 units. If the mass of Object 2 is tripled AND the distance separating Objects 1 and 2 is doubled, then the new gravitational force will be _____ units.

Question Group 13

Question 37

Objects 1 and 2 attract each other with a gravitational force of 18.0 units. If the mass of Object 1 is doubled AND the distance separating Objects 1 and 2 is doubled, then the new gravitational force will be _____ units.

Question 38

Objects 1 and 2 attract each other with a gravitational force of 36.0 units. If the mass of Object 1 is doubled AND the distance separating Objects 1 and 2 is doubled, then the new gravitational force will be _____ units.

Question 39

Objects 1 and 2 attract each other with a gravitational force of 72.0 units. If the mass of Object 1 is doubled AND the distance separating Objects 1 and 2 is doubled, then the new gravitational force will be _____ units.

Question Group 14

Question 40

Objects 1 and 2 attract each other with a gravitational force of 18.0 units. If the mass of Object 1 is doubled AND the mass of object 2 is tripled AND the distance separating Objects 1 and 2 is halved, then the new gravitational force will be _____ units.

Question 41

Objects 1 and 2 attract each other with a gravitational force of 36.0 units. If the mass of Object 1 is doubled AND the mass of object 2 is tripled AND the distance separating Objects 1 and 2 is halved, then the new gravitational force will be _____ units.

Question 42

Objects 1 and 2 attract each other with a gravitational force of 72.0 units. If the mass of Object 1 is doubled AND the mass of object 2 is tripled AND the distance separating Objects 1 and 2 is halved, then the new gravitational force will be _____ units.

Question Group 15**Question 43**

Objects 1 and 2 attract each other with a gravitational force of 18.0 units. If the mass of Object 1 is one-third the original value AND the mass of object 2 is doubled AND the distance separating Objects 1 and 2 is doubled, then the new gravitational force will be _____ units.

Question 44

Objects 1 and 2 attract each other with a gravitational force of 36.0 units. If the mass of Object 1 is one-third the original value AND the mass of object 2 is doubled AND the distance separating Objects 1 and 2 is doubled, then the new gravitational force will be _____ units.

Question 45

Objects 1 and 2 attract each other with a gravitational force of 72.0 units. If the mass of Object 1 is one-third the original value AND the mass of object 2 is doubled AND the distance separating Objects 1 and 2 is doubled, then the new gravitational force will be _____ units.

Question Group 16**Question 46**

Objects 1 and 2 attract each other with a gravitational force of 18.0 units. If the mass of Object 1 is one-fourth the original value AND the mass of object 2 is tripled AND the distance separating Objects 1 and 2 is halved, then the new gravitational force will be _____ units.

Question 47

Objects 1 and 2 attract each other with a gravitational force of 36.0 units. If the mass of Object 1 is one-fourth the original value AND the mass of object 2 is tripled AND the distance separating Objects 1 and 2 is halved, then the new gravitational force will be _____ units.

Question 48

Objects 1 and 2 attract each other with a gravitational force of 72.0 units. If the mass of Object 1 is one-fourth the original value AND the mass of object 2 is tripled AND the distance separating Objects 1 and 2 is halved, then the new gravitational force will be _____ units.