Distance vs. Displacement

Question Group 1
Question 1
A dog walks 12 meters to the east and then 16 meters back to the west.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 2
A dog walks 14 meters to the east and then 20 meters back to the west.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 3
A dog walks 12 meters to the west and then 16 meters back to the east.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 4
A dog walks 14 meters to the west and then 20 meters back to the east.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question Group 2
Question 5
A quarterback back pedals 2.2 meters southward and then runs 6.8 meters northward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 6
A quarterback back pedals 3.3 meters southward and then runs 5.7 meters northward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 7
A quarterback back pedals 2.1 meters northward and then runs 7.4 meters southward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 8
A quarterback back pedals 2.5 meters northward and then runs 6.8 meters southward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question Group 3
Question 9
A shopper walks eastward 5.4 meters and then westward 8.9 meters.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 10
A shopper walks eastward 3.2 meters and then westward 7.2 meters.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 11
A shopper walks westward 5.4 meters and then eastward 7.8 meters.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 12
A shopper walks westward 2.8 meters and then eastward 9.2 meters.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question Group 4

Question 13

A hockey puck moves 22 meters northward, then 16 meters southward, and finally 4 meters northward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 14

A hockey puck moves 26 meters northward, then 12 meters southward, and finally 6 meters northward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 15

A hockey puck moves 18 meters southward, then 12 meters northward, and finally 8 meters southward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 16

A hockey puck moves 28 meters southward, then 14 meters northward, and finally 4 meters southward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question Group 5

Question 17

A cross-country skier moves 36 meters eastward, then 44 meters westward, and finally 22 meters eastward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 18

A cross-country skier moves 54 meters eastward, then 68 meters westward, and finally 16 meters eastward.

For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 19
A cross-country skier moves 28 meters westward, then 62 meters eastward, and finally 54 meters westward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 20
A cross-country skier moves 32 meters westward, then 54 meters eastward, and finally 68 meters westward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question Group 6
Question 21
A kayaker moves 32 meters northward, then 6 meters southward, and finally 16 meters northward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 22
A kayaker moves 22 meters northward, then 18 meters southward, and finally 24 meters northward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 23
A kayaker moves 18 meters southward, then 32 meters northward, and finally 24 meters southward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 24

A kayaker moves 26 meters southward, then 18 meters northward, and finally 12 meters southward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question Group 7
Question 25
A tennis ball moves 18 meters northward, then 22 meters southward, then 14 meters northward, and finally 28 meters southward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 26
A tennis ball moves 16 meters northward, then 22 meters southward, then 12 meters northward, and finally 32 meters southward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacemen

Question 27
A tennis ball moves 24 meters southward, then 16 meters northward, then 18 meters southward, and finally 28 meters northward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 28
A tennis ball moves 22 meters southward, then 12 meters northward, then 16 meters southward, and finally 34 meters northward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question Group 8

Question 29

A football coach walks 12 meters westward, then 16 meters eastward, then 22 meters westward, and finally 6 meters eastward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 30

A football coach walks 18 meters westward, then 12 meters eastward, then 28 meters westward, and finally 14 meters eastward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 31

A football coach walks 10 meters eastward, then 18 meters westward, then 22 meters eastward, and finally 34 meters westward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 32

A football coach walks 24 meters eastward, then 12 meters westward, then 36 meters eastward, and finally 22 meters westward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question Group 9

Question 33

A jogger runs 202 meters westward, then 176 meters eastward, then 94 meters westward, and finally 312 meters eastward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 34

A jogger runs 186 meters westward, then 210 meters eastward, then 156 meters westward, and finally 84 meters eastward.
For this motion, what is the distance moved?

What is the magnitude and direction of the displacement?

Question 35
A jogger runs 224 meters eastward, then 156 meters westward, then 84 meters eastward, and finally 248 meters westward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?

Question 36
A jogger runs 218 meters eastward, then 172 meters westward, then 62 meters eastward, and finally 184 meters westward.
For this motion, what is the distance moved?
What is the magnitude and direction of the displacement?