**Science 10: Physics Day 3 - Distance and Displacement Worksheet**

1. A man in a car left his house. He travelled 2km east, 5km north, 3km west, 8km south, and 1km east.
2. Draw a pictorial representation of his trip.
3. What was the man’s total distance travelled?
4. What was his displacement?

1. A cross country runner leaves school for a 10-mile run. She ends her run at her house, one mile east of the school.
2. What is the total distance she ran?
3. What is her displacement?
4. A squirrel found a pile of nuts 80 meters North of nest. The squirrel made one trip from its nest to the pile. The squirrel, with the nuts in its mouth, headed back towards the next for 35 meters when it saw a cat. Seeing the cat, it dropped the nuts and ran to a tree that was 200 meters in the opposite direction of the next. When the cat was gone, the squirrel returned to the spot where it dropped the nuts.
5. Make a pictorial representation of the squirrel’s movements. Label each movement a, b, c, etc.
6. What was the squirrel’s total distance travelled?
7. What was the total displacement?
8. Alex goes cruising on his dirt bike. He rides 700 m north, 300 m east, 400 m north, 600 m west, 1200 m south, 300 m east and finally 100 m north.
9. Draw a pictorial representation of Alex’s bike ride.
10. What distance did he cover?
11. What was his displacement?
12. Complete each table.

|  |  |  |
| --- | --- | --- |
| **ti** | **tf** | **∆t** |
| 1.0 s | 5.0 s |  |
| 4.56 s | 19.71 s |  |
| 0 h | 3.5 h |  |
| 5.0 s | 14.0 s |  |
| 3 min | 8 min |  |

|  |  |  |
| --- | --- | --- |
|  |  |  |
| + 3.4 m | + 7.8 m |  |
| +14.7 m | +3.1 m |  |
| +12.0 km | +15.7 km |  |
| +13.1 m | +115.4 m |  |
| +5.7 cm | +14.8 cm |  |

1. A runner is moving along a straight road. At a time of 0.62s, the runner’s position is +10.6m. Later, at a time of 9.93s, the runner’s position is +73.9m. Find the time interval and displacement for the runner.
2. A person is driving a car along a straight highway. The car’s position at 9:00a.m. is 13km from home. Its position at 10:30a.m. is 137 km from home. Find the time interval and displacement for this section of the journey.
3. Use the story and the picture to answer the following questions.

Bob leaves home and take the bus to work. He travels 4m East to stop A, then 2m South to stop B, then 4m West to stop C, and finally 2m North to his final stop. Haha! Bob works from home.

1. What is the distance travelled from home to point A?
2. What is the displacement from home to point A?
3. What is the distance travelled from home to point B?
4. What is the distance travelled from home to point C?
5. What is the displacement from home to point C?
6. What is the distance from home (start) to home (finish)?
7. What is the displacement from home (start) to home (finish)?
8. Why are your answers to (f) and (g) different?

Extra practice problems from textbook:

Page 209 # 1 – 8

**Science 10: Physics**

**Distance and Displacement Worksheet**

**Answers**

1. A man in a car left his house. He travelled 2km east, 5km north, 3km west, 8km south, and 1km east.
2. Draw a pictorial representation of his trip.
3. What was the man’s total distance travelled? **19km**
4. What was his displacement? **3km [South]**

1. A cross country runner leaves school for a 10-mile run. She ends her run at her house, one mile east of the school.
2. What is the total distance she ran? **10 miles**
3. What is her displacement? **1 mile [East]**
4. A squirrel found a pile of nuts 80 meters North of its nest. The squirrel made one trip from its nest to the pile. The squirrel, with the nuts in its mouth, headed back towards the next for 35 meters when it saw a cat. Seeing the cat, it dropped the nuts and ran to a tree that was 200 meters in the opposite direction of the next. When the cat was gone, the squirrel returned to the spot where it dropped the nuts.
5. Make a pictorial representation of the squirrel’s movements. Label each movement a, b, c, etc.
6. What was the squirrel’s total distance travelled? **515m**
7. What was the total displacement? **45m [N]**
8. Alex goes cruising on his dirt bike. He rides 700 m north, 300 m east, 400 m north, 600 m west, 1200 m south, 300 m east and finally 100 m north.
9. Draw a pictorial representation of Alex’s bike ride.
10. What distance did he cover? **3600m**
11. What was his displacement? **0m**
12. Complete each table.

|  |  |  |
| --- | --- | --- |
| **ti** | **tf** | **∆t** |
| 1.0 s | 5.0 s | **4.0s** |
| 4.56 s | 19.71 s | **15.15s** |
| 0 h | 3.5 h | **3.5h** |
| 5.0 s | 14.0 s | **9.0s** |
| 3 min | 8 min | **5 min** |

|  |  |  |
| --- | --- | --- |
|  |  |  |
| + 3.4 m | + 7.8 m | **+4.4m** |
| +14.7 m | +3.1 m | **–11.6m** |
| +12.0 km | +15.7 km | **+3.7km** |
| +13.1 m | +115.4 m | **+102.3m** |
| +5.7 cm | +14.8 cm | **+9.1m** |

1. A runner is moving along a straight road. At a time of 0.62s, the runner’s position is +10.6m. Later, at a time of 9.93s, the runner’s position is +73.9m. Find the time interval and displacement for the runner.

**Time interval = 9.31s**

**Displacement = +63.3m**

1. A person is driving a car along a straight highway. The car’s position at 9:00a.m. is 13km from home. Its position at 10:30a.m. is 137 km from home. Find the time interval and displacement for this section of the journey.

**Time interval = 1.5 hours or 90min**

**Displacement = 124km from home**

1. Use the story and the picture to answer the following questions.

Bob leaves home and take the bus to work. He travels 4m East to stop A, then 2m South to stop B, then 4m West to stop C, and finally 2m North to his final stop. Haha! Bob works from home.

1. What is the distance travelled from home to point A? **4m**
2. What is the displacement from home to point A? **4m [E]**
3. What is the distance travelled from home to point B? **6m**
4. What is the distance travelled from home to point C? **10m**
5. What is the displacement from home to point C? **2m [S]**
6. What is the distance from home (start) to home (finish)? **12m**
7. What is the displacement from home (start) to home (finish)? **0m**
8. Why are your answers to (f) and (g) different?

**(f) is the total length and (g) is the length directly from start to finish (which happen to be the same).**