Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Physics 11

**Worksheet 6.1**

**Momentum**

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| 1. Calculate the momentum of a 4 kg object traveling at a velocity of 12 m/s east. 2. A 5 kg object has a momentum of 25 kgm/s west. What is its velocity? 3. An object has a velocity of 8 m/s south and a momentum of 36 kgm/s south. What is its mass? 4. An object has a velocity of 2 m/s east and the magnitude of its momentum is 29 kgm/s. What is the weight of the object? | 1. A 6.6 N object is traveling at a velocity of 3 m/s north. What is the object’s momentum? 2. A 7 kg object travels 260 cm west in 1.1 s at constant velocity. What is the object’s momentum? 3. A 1.3 kg ball hits the floor with a speed of 2 m/s and bounces back off the floor with a speed of 1.6 m/s. Calculate , the object’s change in momentum. 4. A 144 g baseball is pitched horizontally at 38 m/s. The batter hits the ball, sending it back towards the pitcher at 38 m/s. What is the ball’s change in momentum? |

1. The 1.205 Mg physics dragster is traveling at 35 km/h east when it hits the gas and accelerates at 12.5 m/s2 for 3.25 s. Calculate the object’s during this time period.
2. A 5 kg object is dropped from a height of 2.5 m above the floor.
   1. What is its momentum after 0.25 s?
   2. What is its momentum after 1 s?

Answers: 1) 48 kgm/s east 2) 5 m/s west 3) 4.5 kg 4) 142.1 N 5) 2.02 kgm/s north

6) 16.55 kgm/s west 7) 4.68 kgm/s up 8) 10.944 kgm/s towards the pitcher

9) 48,953 kgm/s forwards 10a) 12.25 kgm/s down 10b) Trick question – it hit the ground already so momentum is probably 0, unless it bounced.