Lab report example

Science, Physics

First Last Number 13 September Momentum: a crash lesson The average distance the book moves and averagevelocity of the car as it hits the book.

40cm

60cm

80cm

Average distance moved by the book

1. 30cm

3. 27cm

4. 78 cm

Average velocity of the car

0. 0355m/s

0. 117 m/s

0. 167m/s

2. The momentum (Velocity) for each car position

40cm

60cm

80cm

momentum

3. Graph of the results.

4. An increase in the car momentum increases the distance that the book moved after collision.

5. As the car was released from the top of the ramp its velocity increases until the car collided with the book.

6. According to the equation elocity (McGill and King 12), momentum is

directly proportional to the velocity of the car. In the results of table in question [1], as the velocity increases the momentum also increases linearly.

7. A fast moving car is likely to cause more damage than a slow moving car. A fast moving car has got high velocity. Velocity is directly proportional to momentum, hence, a fast moving car has high momentum which has greater impact on objects.

8. From Newton's second law of motion,

Where m is the mass of the book and v is the velocity of the book. If the mass of the book is doubles, the velocity is decreased since the impulse from the car remains constant. A small velocity means the car will stop at a shorter distance. Hence the distance will decrease.

9. Momentum of the car is directly proportional to its mass according to the formula elocity. Hence if the is doubled its momentum will also be doubled if its velocity remains the same.

Extension;

To verify the answer to question 8, the experiment will be design as follows; The ramp will be set up as in the previous lab experiment with the ramp raised 45 cm above the floor. The meter rule will be stacked at the center of the ramp with its zero mark placed at the bottom end of the ramp. An ultrasound reflector will be taped at the back of the model car. The mass of the car is then measured and recorded. A book of about 300g is placed at the 30cm mark from the bottom end of the ramp. The motion detector is fixed at the higher end of the ramp according to the setup in the lab manual. The motion detector is channeled to the computer interface through channel

one. The computer is then set for data acquisition. The car is placed at the 80 cm mark on the meter rule. The car is released simultaneously with the sound from the detector. After the car hit the book the distance which the book moves is recorded. Repeat twice and find average of the distance the book moved. The whole procedure is repeated but now with a book of 600g. To confirm the results for question [9], we repeat the above procedure but now recording average velocity of the car weighing 500g. The procedure is repeated but with a car of mass 1000g. Again the average velocity of the car is recorded. These velocities are used to calculate the momentum of the car at the time of collision.

Works Cited

McGill and King. Engineering Mechanics, an Introduction to Dynamics . 3rd ed. PWS Publishing Company, 1995. Print.