## Show all work. NO WORK = NO CREDIT

1. What is the momentum of a 0.15 kg arrow that is traveling at $120 \mathrm{~m} / \mathrm{s}$ ?

| Data | Equation | Math | Answer |
| :---: | :---: | :---: | :---: |
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2. What is the mass of an object with a momentum of $250 \mathrm{kgm} / \mathrm{s}$ and a velocity of $5 \mathrm{~m} / \mathrm{s}$ ?

| Data | Equation | Math | Answer |
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3. How fast will a 1200 kg car be traveling when its momentum is $2400 \mathrm{kgm} / \mathrm{s}$ ?

| Data | Equation | Math | Answer |
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4. Which has a higher momentum, a 3.5 kg bowling ball that is rolling at $30 \mathrm{~m} / \mathrm{s}$ or a 50 kg student moving at 1.75 $\mathrm{m} / \mathrm{s}$ ?

| Data | Equation | Math | Answer |
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5. How much impulse is applied by a 25 N force in 30 seconds?

| Data | Equation | Math | Answer |
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6. How much impulse is required to change the velocity of a 2500 kg truck by $15 \mathrm{~m} / \mathrm{s}$ ?

| Data | Equation | Math | Answer |
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7. What will be the change in velocity of a 850 kg car if a force of $50,000 \mathrm{~N}$ is applied to it for 0.5 seconds?

| Data | Equation | Math | Answer |
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8. A $50,000 \mathrm{~kg}$ train is rolling on its own down the track at $5 \mathrm{~m} / \mathrm{s}$. You grab the rope trailing behind it, and exert a stopping force of 2000 N . How long does it take to stop the train?

| Data | Equation | Math | Answer |
| :---: | :---: | :---: | :---: |
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9. A $1,100 \mathrm{~kg}$ car is going at $22 \mathrm{~m} / \mathrm{s}$. What force is needed to stop it in 2.0 seconds?

| Data | Equation | Math | Answer |
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