## **Kinetic Energy Practice Problems**

1. What is the Kinetic Energy of a 150 kg object that is moving with a speed of 15 m/s?

KE =  $\frac{1}{2}$  mv<sup>2</sup>KE =  $\frac{1}{2}$  (150kg) (15 m/s)<sup>2</sup>KE = ?KE =  $\frac{1}{2}$  (150kg) (225)m = 150kgKE = 16875Jv = 15m/sKE = 16875J

ANSWER

KEY

2. An object has a kinetic energy of 25 J and a mass of 34 kg , how fast is the object moving?

$KE = \frac{1}{2} mv^2$	$2KE/m = v^2 OR v^2 = 2KE/m$
KE = 25J	v <sup>2</sup> = 2(25J)/34kg
m = 34kg	$\sqrt{v^2} = \sqrt{1.47}$
$\Lambda = \dot{S}$	v = 1.28m/s

3. An object moving with a speed of 35 m/s and has a kinetic energy of 1500 J, what is the mass of the object.

$KE = \frac{1}{2} mv^2$	$2KE/v^2 = m$ OR m = $2KE/v^2$ (rearrange equation)
KE = 1500J	m = 2(1500J)/(35) <sup>2</sup>
m = ?	m = 3,000/1225
v = 35m/s	m = 2.45kg

4. What is the Kinetic Energy of a 1200 kg object that is moving with a speed of 24 m/s?

KE =  $\frac{1}{2}$  mv<sup>2</sup>KE =  $\frac{1}{2}$  (1200kg) (24 m/s)<sup>2</sup>KE = ?KE =  $\frac{1}{2}$  (1200kg) (576))m = 1200kgKE = 345,600Jv = 24m/sKE = 345,600J

5. An object has a kinetic energy of 14 J and a mass of 17 kg , how fast is the object moving?

KE =  $\frac{1}{2}$  mv<sup>2</sup>2KE/m = v<sup>2</sup> OR v<sup>2</sup> = 2KE/mKE = 14Jv<sup>2</sup> = 2(14J)/17kgm = 17kg $\sqrt{v^2} = \sqrt{1.65}$ v = ?v = 1.28m/s

6. An object moving with a speed of 67 m/s and has a kinetic energy of 500 J, what is the mass of the object.

KE =  $\frac{1}{2}$  mv<sup>2</sup>2KE/v<sup>2</sup> = m OR m = 2KE/v<sup>2</sup> (rearrange equation)KE = 500Jm = 2(500J)/(67)<sup>2</sup>m = ?m = 1000J/4,489v = 67m/sm = .22 kg

7. What is the Kinetic Energy of a 478 kg object that is moving with a speed of 15 m/s?

KE =  $\frac{1}{2}$  mv<sup>2</sup>KE =  $\frac{1}{2}$  (478kg) (15 m/s)<sup>2</sup>KE = ?KE =  $\frac{1}{2}$  (478kg) (225)m = 478kgKE = 53,775Jv = 15m/sKE = 53,775J

8. An object has a kinetic energy of 88 J and a mass of 45 kg , how fast is the object moving?

$KE = \frac{1}{2} mv^2$	$2KE/m = v^2 OR v^2 = 2KE/m$			
KE = 88J	$v^2 = 2(88J)/45kg$			
m = 45kg	$\sqrt{v^2} = \sqrt{3.91}$			
$h = \dot{S}$	v = 1.98m/s			

9. An object moving with a speed of 21 m/s and has a kinetic energy of 140 J, what is the mass of the object.

$KE = \frac{1}{2} mv^2$	$2KE/v^2 = m$	OR m = $2KE/v^2$	(rearrange equation)
KE = 140J	m = 2(140J),	<b>/(21)</b> <sup>2</sup>	
m = 5	m = 280J/44	41	
v = 21m/s	m = 0.63kg		

10. What is the Kinetic Energy of a 100 kg object that is moving with a speed of 12.5 m/s?

KE =  $\frac{1}{2}$  mv<sup>2</sup>KE =  $\frac{1}{2}$  (100kg) (12.5 m/s)<sup>2</sup>KE = ?KE =  $\frac{1}{2}$  (100kg) (156.25)m = 100kgKE = 7,812.5Jv = 12.5m/sKE = 7,812.5J