2011 PreAP Two Dimensions 8

y-dir.
$V_i =$
$V_f =$
$a_y =$
$\Delta y =$
$t =$

Vy =

110 m/s

30°

Vx =

?

x-dir.
$V_i =$
$V_f =$
$a_x =$
$\Delta x =$
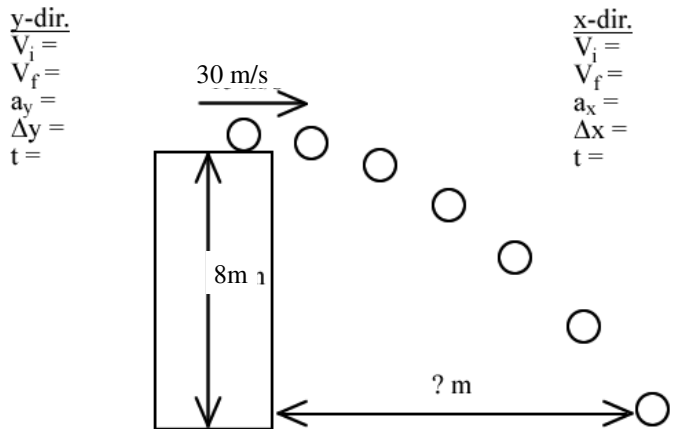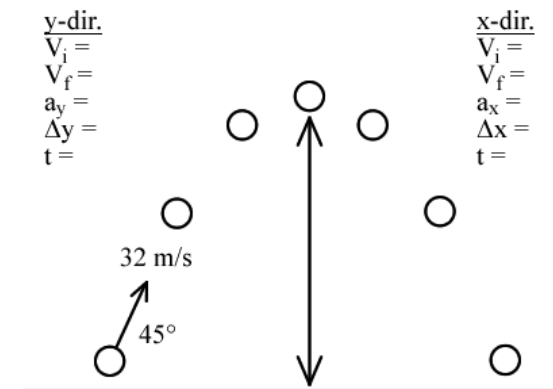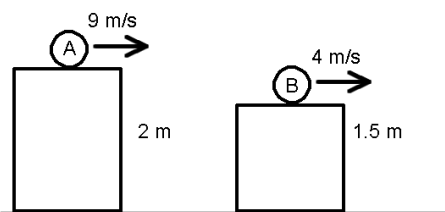$t =$

1. * A projectile is launched at 30° going 110 m/s. Calculate the time in the air and how far away it lands. You may use the diagram if you need to. (*Full key on back: don't just copy: learn.*)
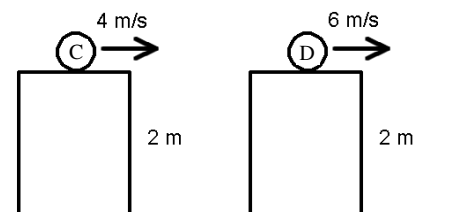
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y-dir.
$V_i =$
$V_f =$
$a_y =$
$\Delta y =$
$t =$

30 m/s

8m

? m

x-dir.
$V_i =$
$V_f =$
$a_x =$
$\Delta x =$
$t =$

2. * An object is launched horizontally from the top of an 8 m tall ledge going 30 m/s.

---

y-dir.
$V_i =$
$V_f =$
$a_y =$
$\Delta y =$
$t =$

32 m/s

45°

x-dir.
$V_i =$
$V_f =$
$a_x =$
$\Delta x =$
$t =$

3. An object (say "Jar Jar Binks") is launched at 45° and 32 m/s. How high does he go?

---

9 m/s

A

2 m

4 m/s

B

1.5 m

4. Two objects are shot from horizontal platforms as shown. Which ball (A or B) is in the air for the most time?

4 m/s

C

6 m/s

D

2 m

2 m

5. A. Which ball (C or D) takes the most time to hit the ground?

   B. Which ball has the greatest range?

10 m/s

60°

A

10 m/s

30°

B
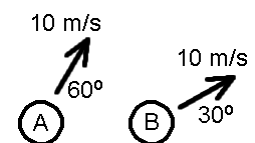
6. Ball A or B above?
   A. Has the greatest y-velocity?

   B. Will go the highest?

Due Tues, Sept 27

2011 PreAP Two Dimensions 8

y-dir.
$V_i = 55 \text{ m/s}$
$V_f = -55 \text{ m/s}$
$a_y = g = -9.8 \text{ m/s}^2$
$\Delta y = 0 m$
$t =$

$V_y = \sin = 55 \text{ m/s}$

110 m/s

30°

$V_x = 110 \cos 30° = 95.3 \text{ m/s}$

?

x-dir.
$V_i = 95.3 \text{ m/s}$
$V_f = 95.3 \text{ m/s}$
$a_x = 0 \text{ m/s}^2$
$\Delta x = ST$
$t = 11.2 \text{ sec}$

$S = \dfrac{D}{T}$

1. * A projectile is launched at 30° going 110 m/s. Calculate the time in the air and how far away it lands. You may use the diagram if you need to. (*Full key on back: don't just copy: learn.*)

y-dir.

$V_f = V_i + at$
$-55 = 55 - 9.8t$
$-110 = -9.8t$
$t = 11.2 \text{ sec}$

$D = ST$
$= 95.3 (11.2)$
$= 1067.4 m$

---

y-dir.
$V_i = 0 \text{ m/s}$
$V_f = ?$
$a_y = g$
$\Delta y = -8m$
$t =$

30 m/s

8m

? m

x-dir.
$V_i = 30 \text{ m/s}$
$V_f = 30 \text{ m/s}$
$a_x = 0 \text{ m/s}^2$
$\Delta x =$
$t = 1.28 \text{ sec}$

Equation:
$S = \dfrac{D}{T}$

An object is launched horizontally from the top of n 8 m tall ledge going 30 m/s.

y-dir.

$\Delta y = V_i t + \frac{1}{2}at^2$
$-8 = -4.9t^2$
$t = 1.28 \text{ sec}$

$D = ST$
$D = 30(1.28)$
$38.4 m$

---

y-dir.
$V_i = 22.6 \text{ m/s}$
$V_f = 0 \text{ m/s}$
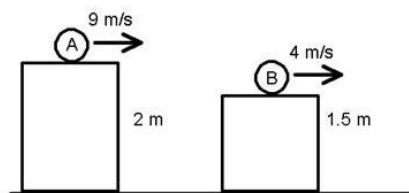$a_y = -g$
$\Delta y = ?$
$t = ?$

32 m/s
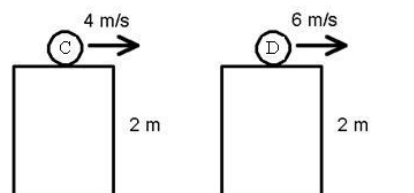
45°

x-dir.
$V_i =$
$V_f =$
$a_x =$
$\Delta x =$
$t =$

3. An object (say "Jar Jar Binks") is launched at 45° and 32 m/s. How high does he go?

only a y-dir. question

$V_y = 32 \sin 45° = 22.6 \text{ m/s}$
$V_f = 0 \text{ m/s}$

$V_f^2 = V_i^2 + 2a\Delta y$
$0 = 22.6^2 - 19.6\Delta y$
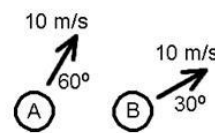$-510.76 = -19.6\Delta y$
$26.1 m = \Delta y$

---

9 m/s

A

2 m

4 m/s

B

1.5 m

4. Two objects are shot from horizontal platforms as shown. Which ball (A or B) is in the air for the most time?

(Figure it out)

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4 m/s

C

2 m

6 m/s

D

2 m

5. A. Which ball (C or D) takes the most time to hit the ground?

B. Which ball has the greatest range?

---

10 m/s

60°

A

10 m/s

30°

B

6. Ball A or B above?
A. Has the greatest y-velocity?

B. Will go the highest?