

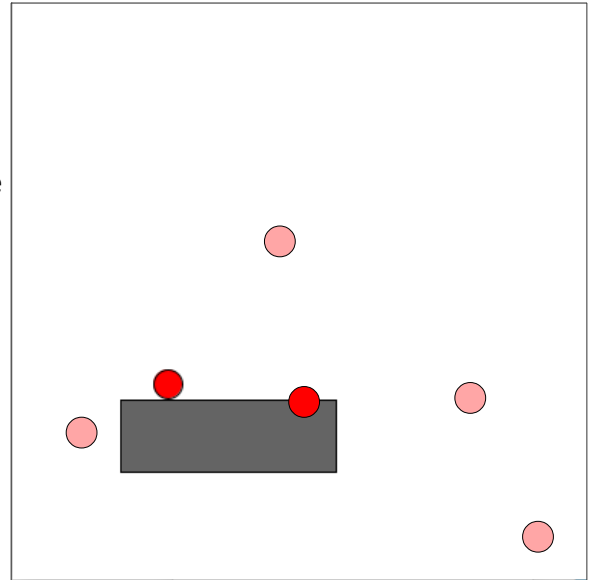
Name: _____

Physics Worksheet

Exercise 2

The ellipse only hits the top of the rectangle if the y coordinate of its bottom side is at or below the top side of the rectangle and the ellipse is also between the left and right sides of the rectangle. The picture shows two cases (red circles) where the ellipse has hit the top of the rectangle and four cases (pale red circles) where the ellipse has not.

To help work out the boolean expressions for this, label the key elements in the picture – draw lines with arrows indicating the “true” side for “has hit the top of the rectangle” as was done in the “Writing Conditions” slides from 10/13.



Next, how are the red circles distinguished from the pale red circles? For a complete “has hit the top of the rectangle” condition, one of the following must be the case:

- the red circles are on the “true” side of every line, while the pale red circles are on the “false” side of at least one line
- the red circles are on the “true” side of at least one line, while the pale red circles are on the “false” side of every line

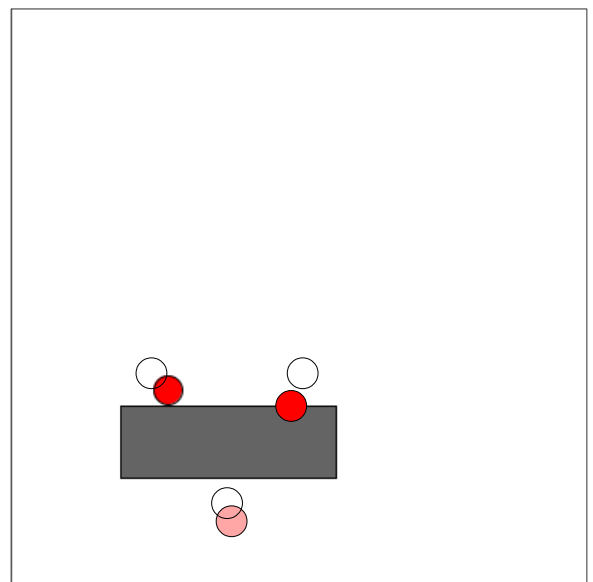
Circle the one that applies.

Does your choice mean that && or || applies here? Answer: _____

Observe that when the ellipse is entirely below the rectangle (the pale red circle), it is also on the “true” side of all of the conditions identified above. To address this, an additional condition is needed: in the previous frame (non-filled circles), the bottom of the ellipse was above the top of the rectangle. Draw the line and arrow indicating “above the top of the rectangle”.

To combine this condition with the previous ones identified, will you need && or ||?

Answer: _____



Repeat drawing lines and arrows to help work out the conditions for the ellipse hitting the other three sides of the rectangle. For each line, also draw an ellipse that is on the “true” side of the line but isn’t hitting that side of the rectangle (the pale red circles in the previous step). This helps ensure that you have a complete condition.

