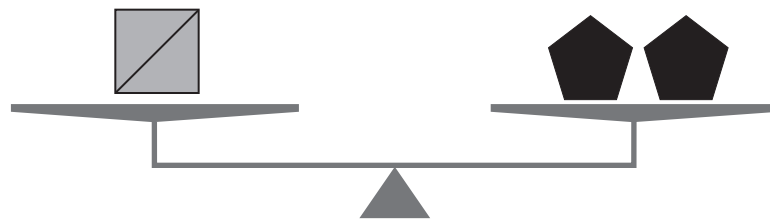
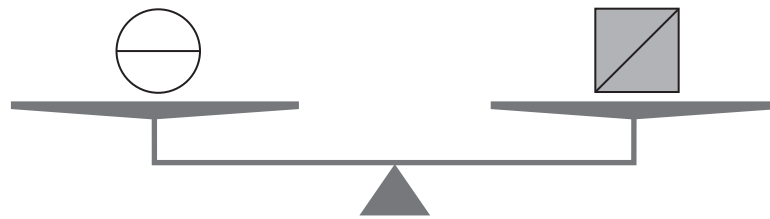
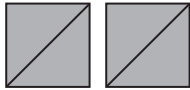






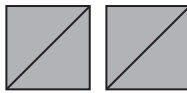
Balance Benders™

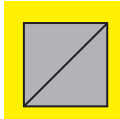



Circle the three answers that will always be true.





a.  = 


d.  =  

b.   







e.  =  






c.  = 

f.   =  

d. 
 (Tip 5)





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a. Substitute  from 2nd balance for  on 1st balance so  = . (Tip 7) Double both pans  = . (Tip 6) Reverse pans. (Tip 1)


b. Divide 2nd balance in half so  = . (Tip 6) Triple each pan so  =  or . (Tip 5)












c. Add both scales together. (Tip 8) Rearrange so  =   =  . (Tip 2)

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



Substitute  from 2nd balance for  on 1st balance so  = . (Tip 7)





c. Half of both pans is  = . (Tip 6)

d. Add  to both pans on 2nd balance. (Tip 4)

e. If  = , then  =  and if  = , then  = , so  =  . (Tips 6 and 7)





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a. Substitute  from 2nd balance for  on 1st balance.  =  and reverse pans. (Tips 7 and 1)


b. If  = , then  is heavier than . (Tip 9)





e.  =  , so  >  and  < . (Tips 9 and 1)

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Substitute  from 1st balance for  on 2nd balance so  = . (Tip 7)

a. Half of each pan is  =   =  . (Tip 6)

c. Substitute  for . (Tip 7)

d. Since  = , then  > .






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a.  is heavier than , so  > .











b. From 1st balance,  > . Since  > , then  > . (Tip 7)

e. From 1st balance,  < , so  < . (Tip 7)

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From 2nd balance, substitute  for  on 1st balance.   is heavier than .

b.  <  .





d. From 2nd balance,  = . (Tip 5) Substitute  for  on 1st balance.   >  or  <  . (Tip 7)



e. Since  <  , adding the same weight to both pans does not change the balance. (Tip 3)

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From 2nd balance,  = . (Tip 6) Removing  and  from 1st balance shows  = .







a. Add  to both pans of  = . (Tip 3)

c.  = . Adding one to each pan of  =  does not change the balance. (Tip 3)

e. Triple both pans of  = . (Tip 5)

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b. Double both pans in 2nd balance. (Tip 5)

c. Substitute  for  in 1st balance so   = . (Tip 7) Remove  from each pan. (Tip 4)

d. Substitute  for . (Tip 7)