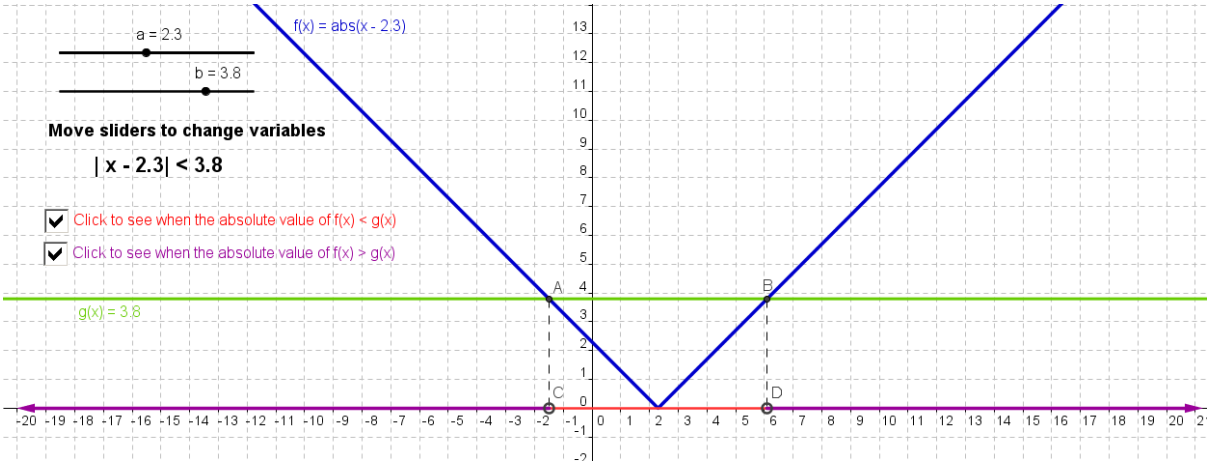
Student Activity: To investigate absolute value

Use in connection with the interactive file, 'Absolute Value', on the Student's CD.

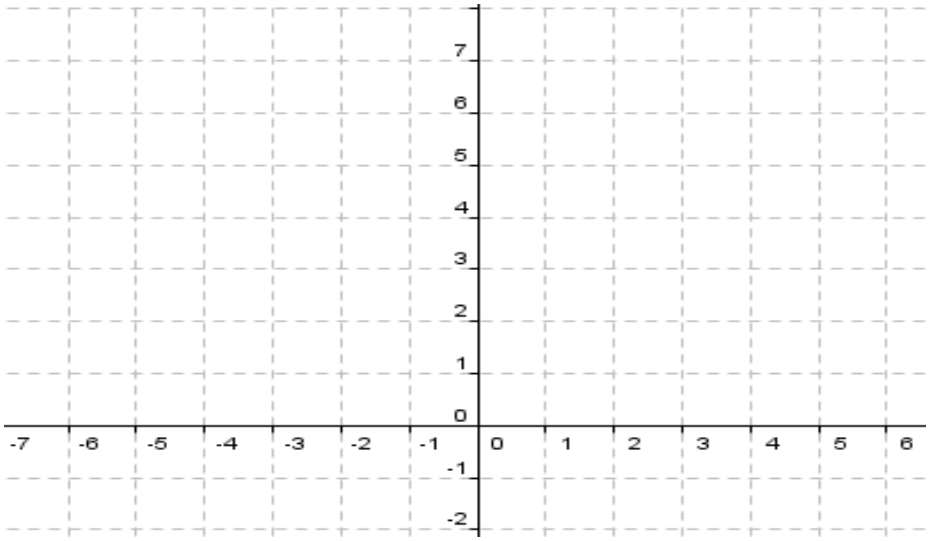


1.

a. Complete the following table:

x	x-2	|x - 2|
-5		
-4		
-3		
-2		
-1		
0		
1		
2		
3		

b. Use the information in the above table to draw a graph of f(x) = |x - 2|. Check your graph against the interactive file.



c. On the same diagram draw g(x) = 3.

d. At what points do f(x) and g(x) intersect?

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e. Use your graph to determine the values of x for which $|x - 2|<3$.

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f. Use your graph to determine the values of x for which $|x - 2|>3$.

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g. At the points of intersection of f(x) = g(x), is $|x - 2|>3$, $|x - 2|<3$ or $|x - 2|=3$?

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h. Given $|x| = 5$, is it true that $x=5$ and $-x = 5$? Explain.

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i. Given $|x -2| < 3$, is it true that $x - 2 < 5$ and $-(x-2) < 5$?

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j. Solve the 2 inequalities in the above section of the question using algebra.

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k. Did the solution you got by algebra agree with the solution you got from the graph above? If not, recheck your work.

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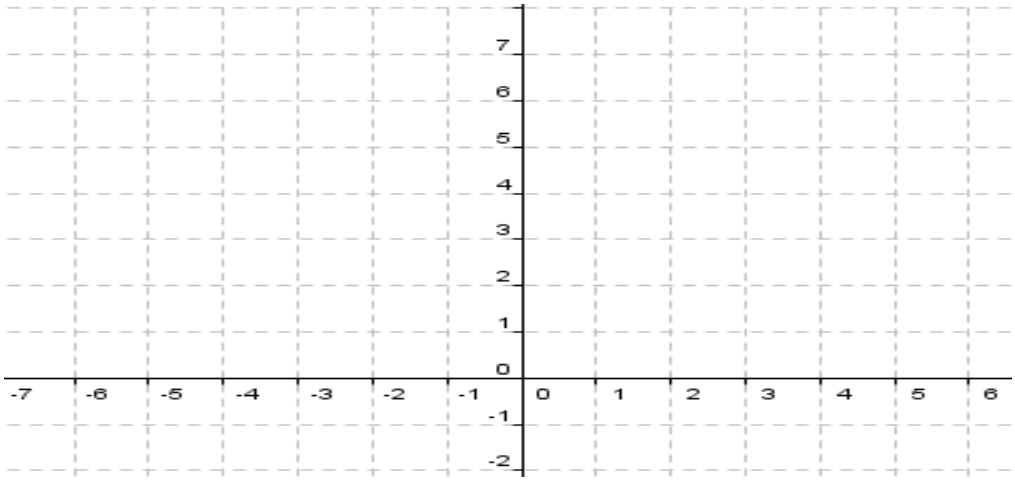
2.

a. Complete the following table:

x	$x-\frac{1}{2}$	$\left\|x-\frac{1}{2}\right\|$
-5		
-4		
-3		
-2		
-1		
0		
1		
2		
3		

b. Using the information from the above table, draw a graph of f(x) = $\left|x-\frac{1}{2}\right|$ and check your graph against the interactive file.



c. On the same diagram draw g(x) = 2.

d. Where do f(x) and g(x) intersect?

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e. Use your graph to determine the values of x for which $\left|x-\frac{1}{2}\right|$ < 2.

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f. Use your graph, to determine the values of x for which $\left|x-\frac{1}{2}\right| > 2$.

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g. At the points of intersection of f(x) = g(x) is $\left|x-\frac{1}{2}\right|>2$, $\left|x-\frac{1}{2}\right|<2$ or $\left|x-\frac{1}{2}\right|=2$?

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h. Given $\left|x-\frac{1}{2}\right|< 2$ is it true that $x-\frac{1}{2}< 5$ and $-(x-\frac{1}{2}) < 5$?

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i. Solve the 2 inequalities in the above section of the question using algebra.

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j. Did the solution you got by algebra agree with the solution you got from the graph? If not, recheck your work.

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