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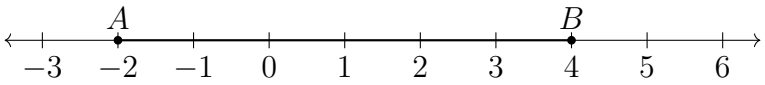
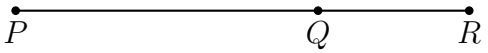
2.7 Test: Solving for length and angle measures

1. Two points $A(-2)$, $B(4)$ and the segment $\overline{AB}$ are shown on the number line.

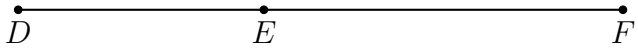


What is the length of the segment $\overline{AB}$? Show your work as an equation.

2. Given $\overline{PQR}$, $PQ = 4\frac{3}{4}$, and $QR = 2\frac{1}{2}$. Find PR.



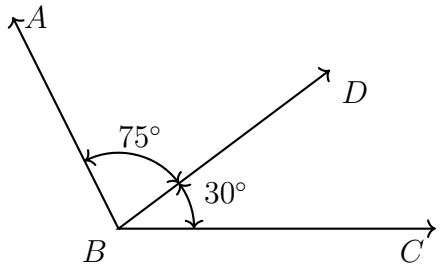
3. Given $\overline{DEF}$, $DE = 2x + 4$, $EF = x + 12$, $DF = 25$. Find DE.



4. Apply the Angle Addition postulate. Write and equation to support your work.

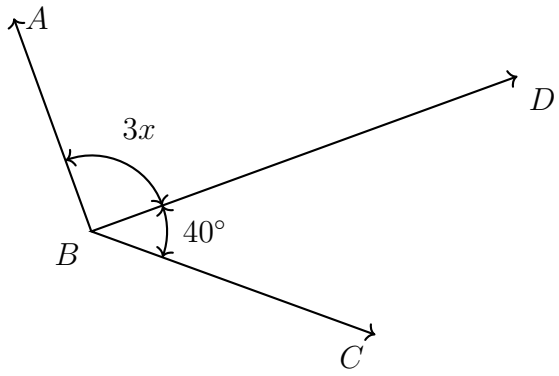
   Given $\text{m}\angle ABD = 75°$ and
   $\text{m}\angle DBC = 30°$.

   Find $m\angle ABC$.



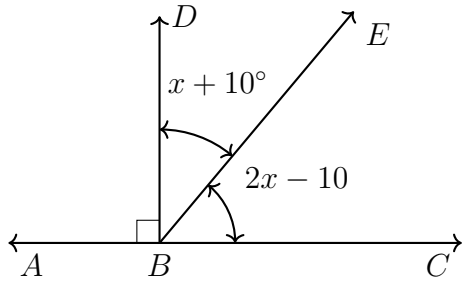
5. Given the angle measures and situation shown, write an equation and solve for x.

   $\text{m}\angle ABD = 3x$
   $\text{m}\angle DBC = 40°$
   $m\angle ABC = 130°$



6. Given the angle measures and perpendicular situation shown, $\overrightarrow{BD} \perp \overleftrightarrow{ABC}$. Find x.

   $\text{m}\angle DBE = x + 10°$
   $\text{m}\angle EBC = 2x - 10°$



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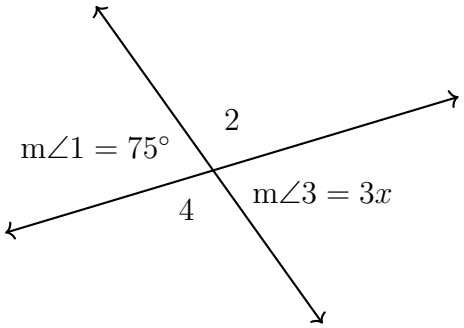
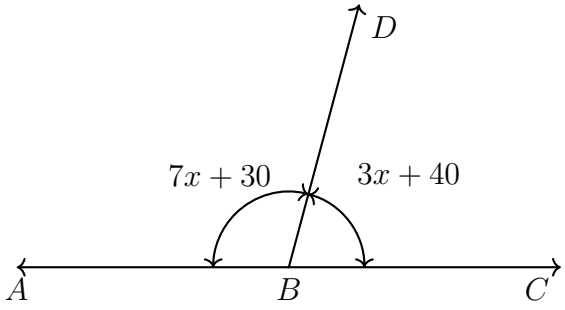
7. Two lines intersect with $\text{m}\angle 1 = 75°$ and $\text{m}\angle 3 = 3x$. Find x.

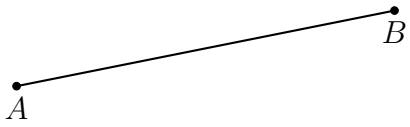


8. A linear pair have measures $\text{m}\angle ABD = 7x + 30°$ and $\text{m}\angle DBC = 3x + 40°$.
   Find $\text{m}\angle ABD$. Check your answer.

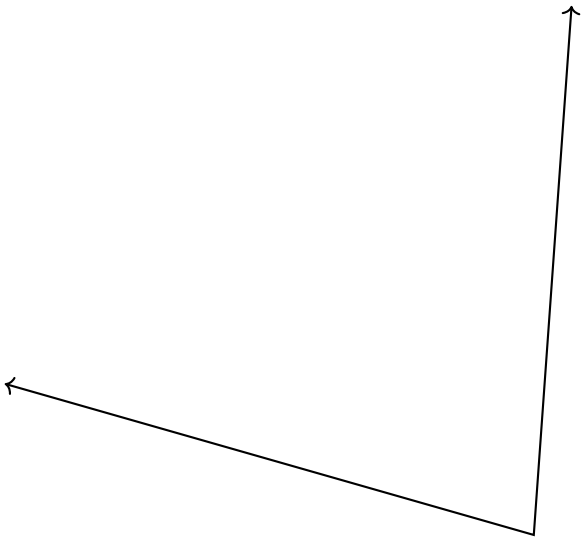


9. Triangle ABC has angle measures $m\angle A = 50°$, $m\angle B = 70°$. Find the measure of the third angle, $m\angle C$.

10. Construct an equilateral triangle with one side $\overline{AB}$.



11. Construct an angle bisector of the given angle.



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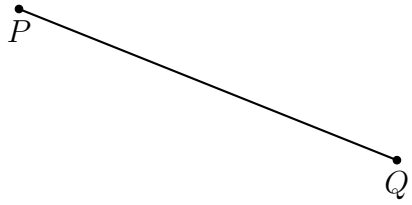
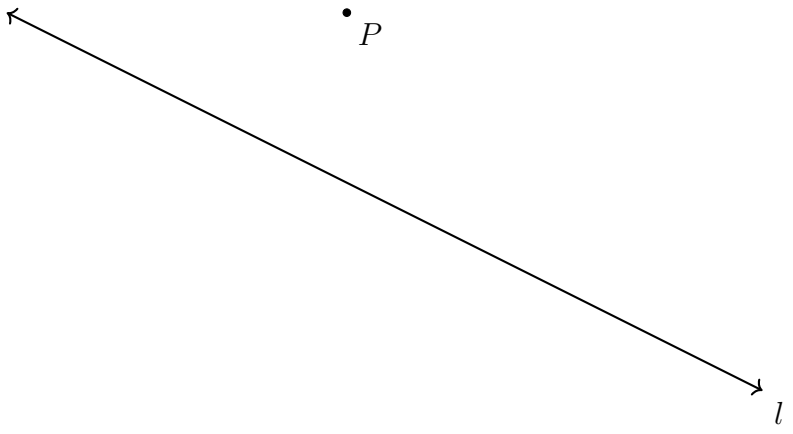
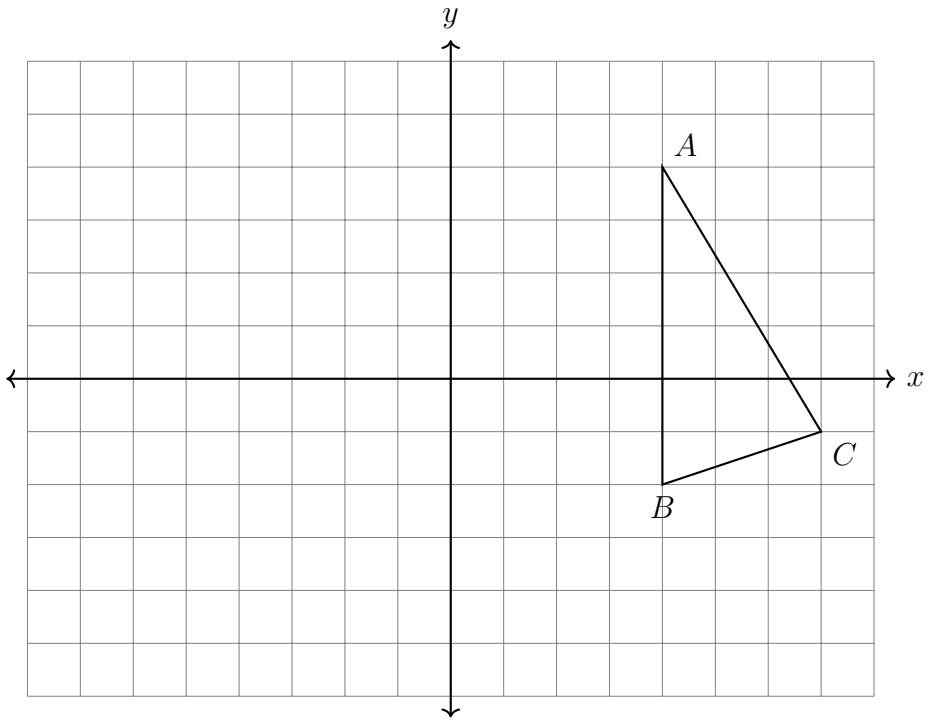
12. Construct a perpendicular bisector of $\overline{PQ}$.



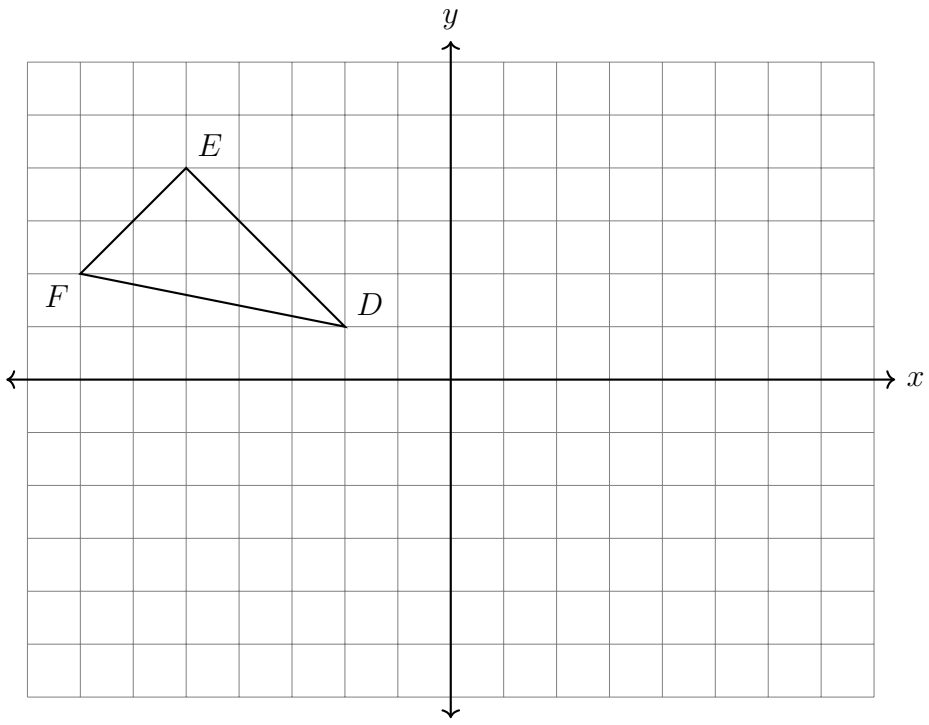
13. Construct a perpendicular to line l through the point P.



14. Translate $\triangle ABC$ left seven and up one unit. Label the image $\triangle A'B'C'$.



15. Reflect $\triangle DEF$ across the x-axis, labeling the image $\triangle D'E'F'$.



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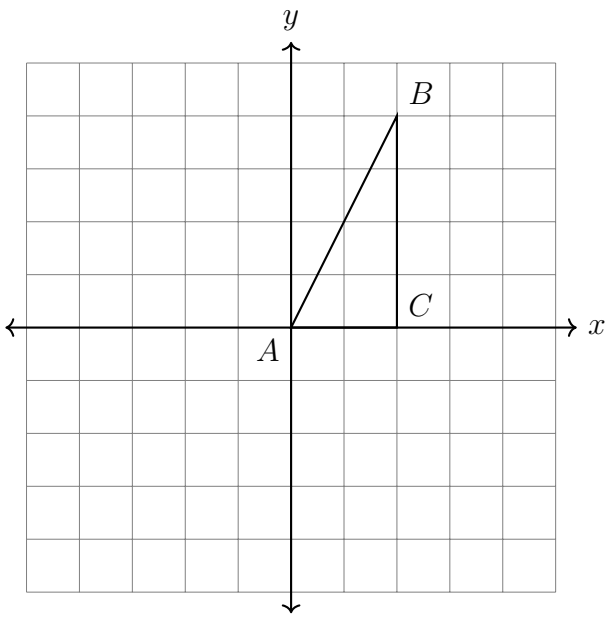
16. Rotate the triangle 90° clockwise around the origin, $\triangle ABC \to \triangle A'B'C'$. Complete the table of the coordinates and plot and label the image on the grid.

$A(0,0) \to$

$B(2,4) \to$

$C(2,0) \to$



17. Triangle $X'Y'Z'$ is the image of triangle XYZ after a translation. Which triangle is larger, or are they the same size? Justify your answer.

18. A reflection maps $P(-5,3)$ onto $P'(5,3)$. Is the reflection across the x-axis or the y-axis?

19. Specify the translation that maps $Q(-1,2) \to Q'(6,-5)$.

20. Simplify each expression by combining like terms.

(a) $7x + 5 - 2x + 3$

(b) $-5y^2 - 4y + 8y + y^2$

(c) $5 + 5\pi + 7 - 3\pi$

(d) $12x - 7 + 4\sqrt{5} + 2\sqrt{5}$

21. Use the function $f(x) = 8x - 3$ to answer the questions.

(a) What is $f(0)$?

(b) Find $f(\frac{1}{4})$

(c) What is x when $f(x) = 69$?

22. Solve each equation for x. Then check your answer.

(a) $2x + 7x + 13 = 31$

(b) $5x - 7 = 8x + 14$