1. Harold was 5 years older than Phidella. In 10 years he found that 4 times his age exceeded twice Phidella's age by only 50. How old were Harold and Phidella in the beginning?

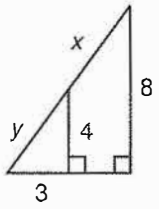
2. Divide $x^3 - 8$ by $x - 4$ and check.

3. The sum of the digits of a two-digit counting number was 9. When the digits were reversed, the new number was 45 less than the original number. What was the original number?

4. Simplify: $-16^{-3/4}$

5. A truck headed east 2 hours before a bus headed east from the same location. The rate of the bus was 60 mph and the rate of the truck was 40 mph. How long did it take the bus to get 20 miles ahead of the truck?

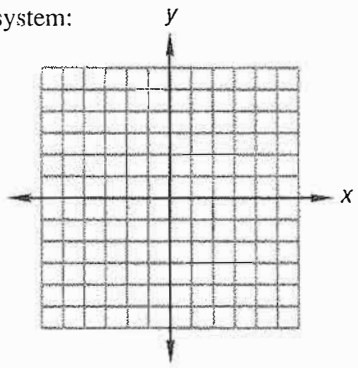
6. Find x.



7. Solve for c: $x = p\left(\frac{1}{a} + \frac{m}{c}\right)$

8. How many different ways can the letters M, A, T, and H be arranged in order if no repetition is permitted?

9. Graph on a rectangular coordinate system: $x + 3y + 6 = 0$



10. Show that $13.0\overline{12}$ is a rational number by writing it as a fraction of integers.

11. Simplify: $\dfrac{\frac{a}{x+y} + \frac{m}{y}}{\frac{x}{a+m}}$

Solve:

12. $3x^0 - 2(x - 3^0) - |-11 - 2| = 4x(2 - 5^0) - 7x$

13. $\log_3(x + 7) + \log_3 2 = \log_3 20$

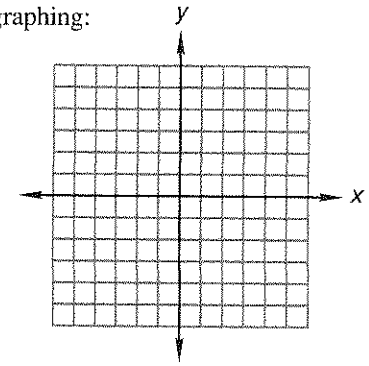
14. The number of moose varied inversely as the number of bears and directly as the number of bison. When there were 75 moose, there were 85 bears and 15 bison. How many bears were there when there were 10 moose and 30 bison?

15. Solve $-5x - 6 = -6x^2$ by factoring.

16. Multiply: $(2x + 4)(3x^2 - 2x - 10)$

17. Evaluate: $x^2 - x^3y - xy$ if $x = -\frac{1}{2}$ and $y = -\frac{1}{4}$

18. Complete the square as an aid in graphing: $y = -x^2 + 2x + 2$



19. Factor: $x^3y^3 - 64$

20. Simplify: $\sqrt[6]{9\sqrt[3]{3}}$

Solve:

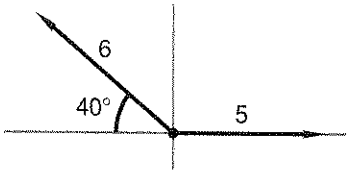
21. $\sqrt{x^2 + 3x - 10} + 2 = x$

22. $\begin{cases} x^2 + y^2 = 25 \\ 2x - y = 5 \end{cases}$

23. Solve $-3x^2 - 4 = 2x$ by using the quadratic formula.

24. Simplify: $\dfrac{3i - 6}{-2i + 1}$

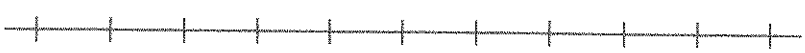
25. The two forces are applied to the object as indicated. Find the resultant force on the object.



26. Find the equation of the line that passes through (4, 2) and is perpendicular to the line $3y - 2x = 5$.

27. Use the distance formula to find the distance between (5, −2) and (−3, 3).

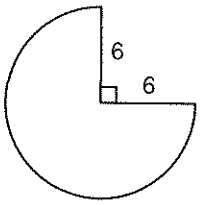
28. Graph on a number line: $-|x| + 5 > 0$; $D = \{\text{Reals}\}$



29. There were 26 nickels, dimes, and quarters in all, and their value was \$2.25. How many coins of each type were there if there were 10 times as many nickels as quarters?

30. Find the number that is $\frac{1}{3}$ of the way from $2\frac{1}{8}$ to 5.

31. The figure shown is the base of a container 12 in. high. Dimensions are in inches. Find the volume in cubic feet.



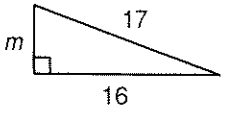
32. Find three consecutive integers such that the product of the first and the third is 35 greater than the product of the second and 5.

33. Expand: $(x^{1/4} + y^{1/2})^2$

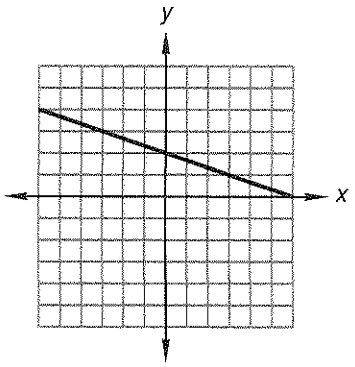
34. Solve: $\begin{cases} \frac{3}{2}x - \frac{2}{5}y = 2 \\ 3x + 0.5y = 17 \end{cases}$

35. One solution was 10% alcohol and the other was 30% alcohol. How much of each should be used to get 200 gallons of a solution that is 17% alcohol?

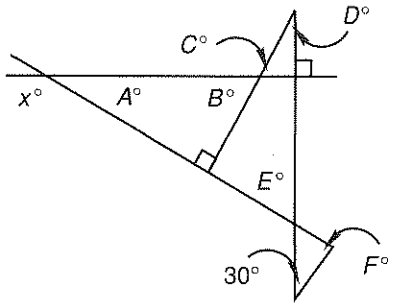
36. Find side m.



37. Find the equation of the line.



38. In this figure, x equals 150. Find A, B, C, D, E, and then find F.



39. Solve: $\frac{3x - 2}{7} - \frac{x}{4} - \frac{x - 3}{2} = 1$

40. Simplify: $\frac{x^2 - 3x - 18}{x^2 - 4x - 32} \div \frac{x^2 - 2x - 24}{x^2 - x - 20}$

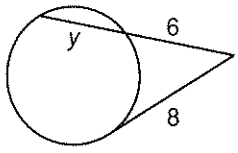
41. Factor completely. Always begin by factoring the GCF.
$-3ax^2p + 24pa + 6axp$

42. Gary and Lynn found that the larger number was 2 greater than 4 times the smaller number. Also, the larger number was 6 less than 8 times the smaller number. What were the two numbers?

43. Simplify: $\frac{x^a y^{a/3} y^{-2}}{x^{a/2}}$

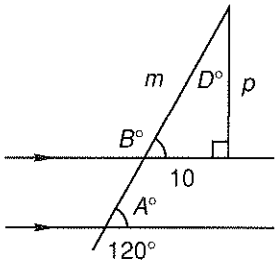
44. Simplify by adding like terms: $\frac{a}{x} - \frac{3a^2c^0x^{-1}}{a} + \frac{4x^{-1}}{aa^{-2}}$

45. Find y.



46. Add: $\frac{5}{x} + \frac{6}{x^2 - 4} - \frac{3x}{2 - x}$

47. Find side m.



48. Use scientific notation to estimate: $\frac{(4353)(933{,}216 \times 10^{-11})}{(319{,}214)(0.01603 \times 10^{-31})}$

49. The beaker was filled with methylbromide, CH_3Br. What percent by weight of this compound was bromine (Br)? (C,12; H, 1; Br, 80)

50. Find the area of this isosceles triangle. Dimensions are in meters.