Name: _____ **Class:** _____ **Date:** _____ **ID: A**

2017-2018 Integrated 2 Midterm Review - Baker

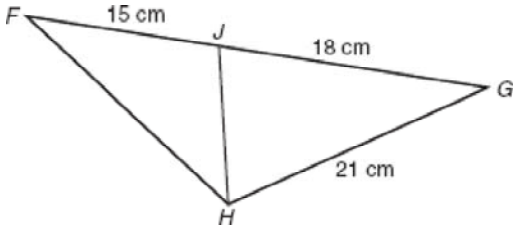
Give an example of each term. Include a sketch with each example.

1. Angle-Angle Similarity Theorem

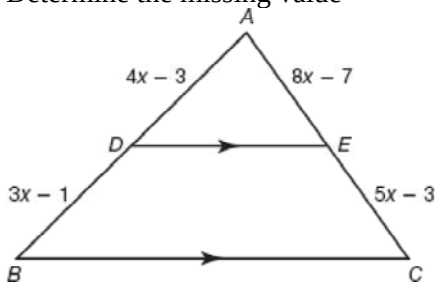
2. Side-Side-Side Similarity Theorem

3. Side-Angle-Side Similarity Theorem

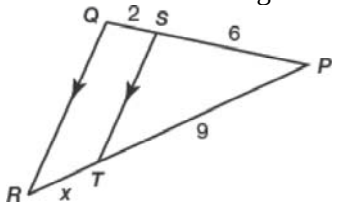
4. Calculate the length of the indicated segment
$\overline{HJ}$ bisects $\angle H$. Calculate HF.



5. Determine the missing value



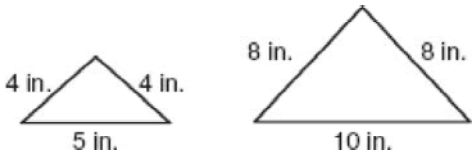
6. Determine the missing value



Explain how you know that the triangles are similar.

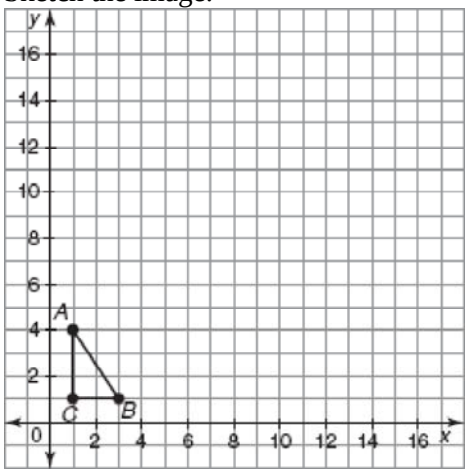
7.

8.



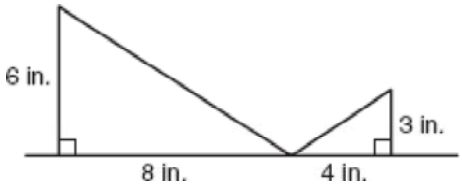
9. Write the corresponding sides of the triangles as proportions.
$\triangle ADF \sim \triangle GLM$

10. The scale factor is 4 and the center of dilation is the origin.
Sketch the image.

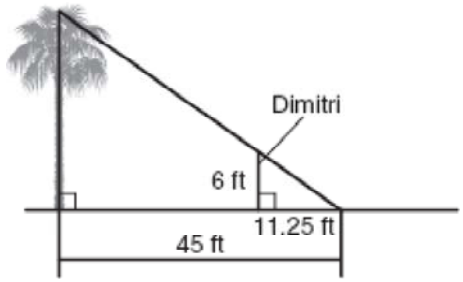


11. Determine the coordinates of the image. $\triangle DEF$ has vertices $D(8, 4)$, $E(2, 6)$, and $F(3, 1)$. What are the vertices of the image after a dilation with a scale factor of 5 using the origin as the center of dilation?

12. Explain how you know that each pair of triangles are similar.



13. Calculate the missing distance. Dimitri wants to measure the height of a palm tree. He lines himself up with the palm tree's shadow so that the tip of his shadow meets the tip of the palm tree's shadow. Then, he asks a friend to measure the distance from where he was standing to the tip of his shadow and the distance from the palm tree to the tip of its shadow.



What is the height of the palm tree?

14. A baseball is thrown upward from a height of 5 feet with an initial velocity of 42 feet per second. Let t = the time in seconds after the baseball is thrown. Let h = the height of the baseball. The quadratic function $h(t) = -16t^2 + 42t + 5$ represents the height of the baseball as a function of time. Determine the absolute maximum. Describe what the x- and y-coordinates of this point represent in terms of the problem situation.

15. Identify the intervals of increase and decrease for each function.

$f(x) = x^2 - 4x + 6$

16. Determine the x-intercepts of each quadratic function in factored form.
$f(x) = 3(x + 4)(x - 2)$

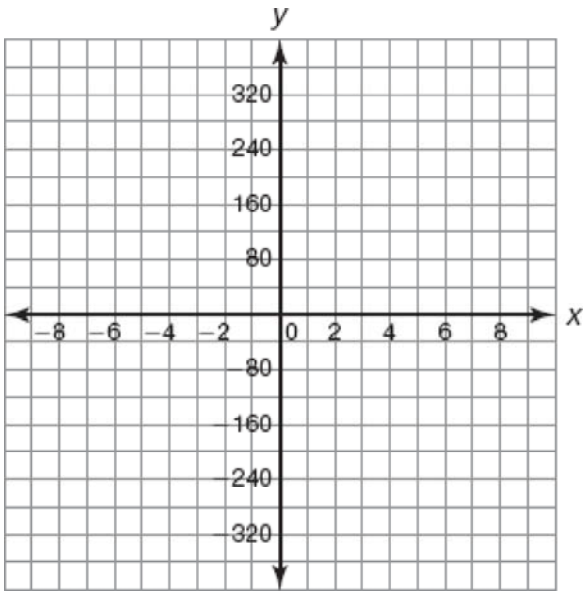
17. Write a quadratic function that represents a parabola that opens upward and has x-intercepts $(-8, 0)$ and $(-1, 0)$.

18. Determine the vertex of the parabola.
$f(x) = x^2 + 2x - 15$

19. Determine the vertex $f(x) = -2(x - 1)^2 - 8$

20. Rewrite the function in vertex form.
$f(x) = 2x^2 - 4x - 6$

21. Graph the function that represents the problem situation. Identify the absolute maximum, zeros, and the domain and range of the function in terms of both the graph and problem situation.
A model rocket is launched from the ground with an initial velocity of 120 feet per second. The function $g(t) = -16t^2 + 120t$ represents the height of the rocket, $g(t)$, t seconds after it was launched.



Identify the form of each quadratic function as either standard form, factored form, or vertex form. Then state all you know about the quadratic function's key characteristics, based only on the given equation of the function.

22. $f(x) = 5(x-3)^2 + 12$

23. $f(x) = -(x-8)(x-4)$

24. $f(x) = -3x^2 + 5x$

25. Describe the transformation performed on each function $g(x)$ to result in $d(x)$.
$g(x) = x^2$
$d(x) = -(x-2)^2 + 5$

26. Simplify $(4m^2 + 9m) - (2m^2 + 6)$

27. Determine the product of the binomials $2x + 1$ and $x + 3$

28. Determine the product of the binomials $(x + 2)(x^2 + 6x - 1)$

29. Factor each trinomial completely $x^2 - 2x - 8$

30. Factor and solve each quadratic equation.
$x^2 + 5x + 6 = 0$

31. Determine the root(s) of each quadratic equation.
$4x^2 - 9 = 0$

32. Simplify the radical $\sqrt{12}$

33. Determine the roots $x^2 + 4x - 6 = 0$

34. Determine the approximate zeros or roots of each function or equation. $f(x) = x^2 + 3x - 5$

35. Determine the approximate zeros or roots of each function or equation. $-3x^2 + 8x - 2 = -6$

36. Use the discriminant to determine the number of zeros or roots each function or equation has. Then solve for the zeros or roots. $f(x) = 9x^2 + 5x + 1$

37. Determine the roots $x^2 + 7x - 2 = -12$

38. Solve each system of equations

$$\begin{cases} y = x^2 - 3x + 1 \\ y = x - 3 \end{cases}$$

39. Solve each system of equations

$$\begin{cases} y = x^2 - 2x + 1 \\ y = -x^2 + 3x + 4 \end{cases}$$

40. Simplify $(5x - 8) + (7x + 10)$

41. Simplify $\dfrac{10 + \sqrt{-12}}{2}$

42. Simplify $(4 - 5i)(8 + i)$

43. Determine the zeros $f(x) = x^2 + 2x + 5$

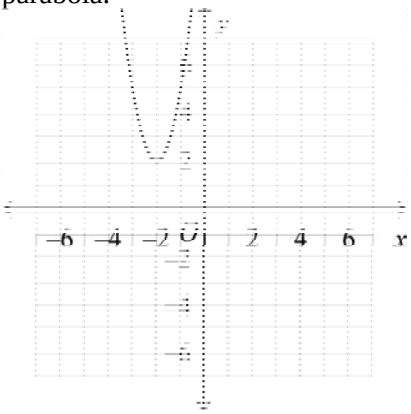
44. Simplify $\sqrt{-20}$

45. Simplify $(2 + 5i) - (7 - 9i)$

46. Simplify $9 + 3i(7 - 2i)$

47. Simplify $(9 + 3i)(7 - 2i)$

48. Use vertex form to write the equation of the parabola.



49. Graph $y = -2(x - 7)^2 + 5$.