

Name _____

Factor completely.

1) $(x - 1)^2 + 107(x - 1) + 108$

1) _____

2) $x^2 + 6xy - 27y^2$

2) _____

3) $x^3 - x^2 - 20x$

3) _____

Factor completely using the grouping method to factor trinomials. If unfactorable, indicate that the polynomial is prime.

4) $6x^2 + 13xt + 6t^2$

4) _____

5) $12x^2 + 17xt + 6t^2$

5) _____

6) $9x^2 - 6xt - 8t^2$

6) _____

Factor completely. If unfactorable, indicate that the polynomial is prime.

7) $9 - w^2$

7) _____

8) $36 - w^2$

8) _____

9) $(x - 9)^2 - 16$

9) _____

10) $(x - 6)^2 - 25$

10) _____

11) $s^{16} - t^{18}$

11) _____

12) $s^{16} - t^{10}$

12) _____

13) $121t^6 - 18$

13) _____

14) $121c^8 - 26$

14) _____

Factor completely.

15) $x^3 - 8$

15) _____

16) $192k^3m - 375m^4$

16) _____

17) $875x^3 + 189$

17) _____

18) $243x^3 + 1125$

18) _____

19) $81k^3m - 24m^4$

19) _____

20) $t^3 + 343$

20) _____

21) $t^3 + 729$

21) _____

22) $576x^3 + 243$

22) _____

23) $54x^3 + 128$

23) _____

24) $a^3b^3 + 729$

24) _____

25) $a^3b^3 + 27$

25) _____

26) $343 - t^3$

26) _____

27) $729 - t^3$

27) _____

28) $x^4 - \frac{x}{8}$

28) _____

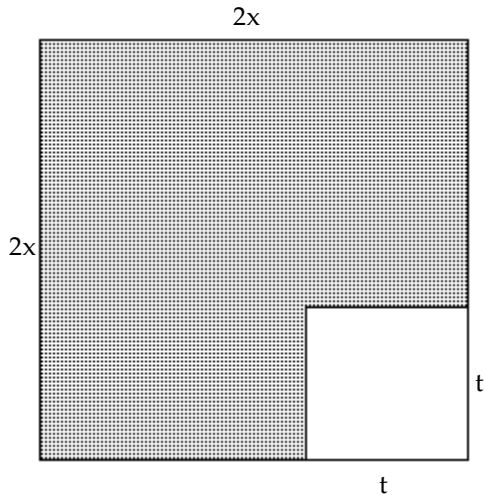
29) $x^4 - \frac{x}{64}$

29) _____

Solve the problem.

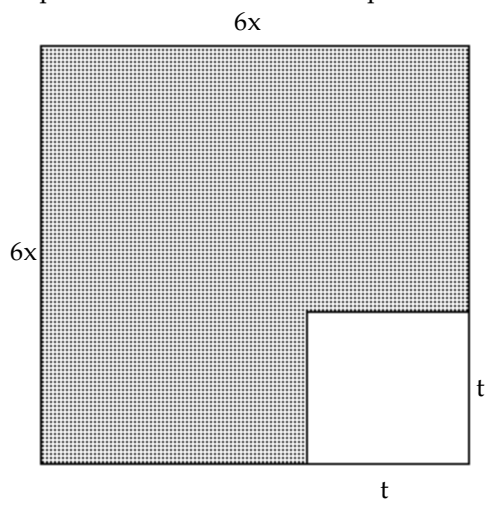
30) Express the shaded area as the product of two binomials.

30) _____



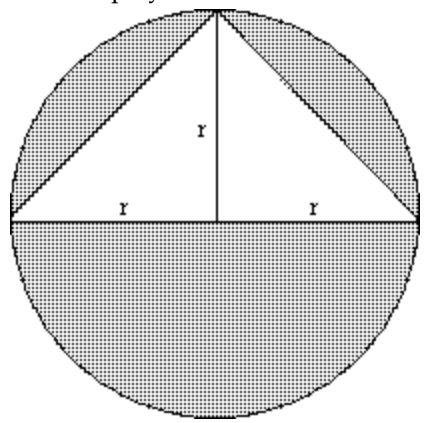
31) Express the shaded area as the product of two binomials.

31) _____



32) A circle with a radius r contains a triangle whose base passes through the center of the circle and whose height is r . Express the shaded area in terms of r and π as a completely factored polynomial.

32) _____



33) A machine produces open boxes using square sheets of plastic. The machine cuts equal-sized squares measuring 4 inches on a side from each corner of the sheet, and then shapes the plastic into an open box by turning up the sides. If each box must have a volume of 1600 cubic inches, find the length of one side of the open box.

33) _____

34) A machine produces open boxes using square sheets of plastic. The machine cuts equal-sized squares measuring 3 inches on a side from each corner of the sheet, and then shapes the plastic into an open box by turning up the sides. If each box must have a volume of 675 cubic inches, find the length of one side of the open box. 34) _____

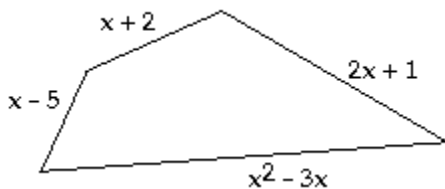
35) A machine produces open boxes using square sheets of plastic. The machine cuts equal-sized squares measuring 2 inches on a side from each corner of the sheet, and then shapes the plastic into an open box by turning up the sides. If each box must have a volume of 242 cubic inches, find the length of one side of the open box. 35) _____

36) A triangular piece of glass is being cut so that the height of the triangle is 4 inches shorter than twice the base. If the area of the triangle is 80 square inches, how long is the height of the triangle? 36) _____

37) A triangular piece of glass is being cut so that the height of the triangle is 4 inches shorter than twice the base. If the area of the triangle is 288 square inches, how long is the height of the triangle? 37) _____

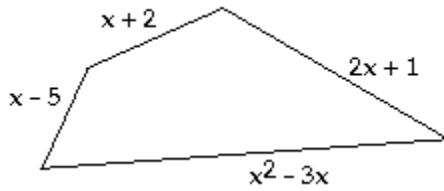
38) A triangular piece of glass is being cut so that the height of the triangle is 4 inches shorter than twice the base. If the area of the triangle is 48 square inches, how long is the height of the triangle? 38) _____

39) The perimeter of the quadrilateral is 130 inches. Find the lengths of the sides. 39) _____



40) The perimeter of the quadrilateral is 108 inches. Find the lengths of the sides.

40) _____



Solve the equation.

41) $x(5x + 8) = 4$

41) _____

42) $x(5x + 28) = 12$

42) _____

43) $x(3x + 16) = 12$

43) _____

Solve.

44) $9t^3 - 16t = 0$

44) _____

45) $64t^3 - 25t = 0$

45) _____

46) $25t^3 - 4t = 0$

46) _____

47) $49t^3 - 16t = 0$

47) _____

Answer Key

Testname: Q4PREP CH.4.4 TO 4.7 V01

- 1) Prime
- 2) $(x + 9y)(x - 3y)$
- 3) $x(x + 4)(x - 5)$
- 4) $(3x + 2t)(2x + 3t)$
- 5) $(3x + 2t)(4x + 3t)$
- 6) $(3x - 4t)(3x + 2t)$
- 7) $(3 - w)(3 + w)$
- 8) $(6 - w)(6 + w)$
- 9) $(x - 5)(x - 13)$
- 10) $(x - 1)(x - 11)$
- 11) $(s^8 + t^9)(s^8 - t^9)$
- 12) $(s^8 + t^5)(s^8 - t^5)$
- 13) Prime
- 14) Prime
- 15) $(x - 2)(x^2 + 2x + 4)$
- 16) $3m(4k - 5m)(16k^2 + 20km + 25m^2)$
- 17) $7(5x + 3)(25x^2 - 15x + 9)$
- 18) $9(3x + 5)(9x^2 - 15x + 25)$
- 19) $3m(3k - 2m)(9k^2 + 6km + 4m^2)$
- 20) $(t + 7)(t^2 - 7t + 49)$
- 21) $(t + 9)(t^2 - 9t + 81)$
- 22) $9(4x + 3)(16x^2 - 12x + 9)$
- 23) $2(3x + 4)(9x^2 - 12x + 16)$
- 24) $(ab + 9)(a^2b^2 - 9ab + 81)$
- 25) $(ab + 3)(a^2b^2 - 3ab + 9)$
- 26) $(7 - t)(49 + 7t + t^2)$
- 27) $(9 - t)(81 + 9t + t^2)$
- 28) $x \left(x - \frac{1}{2} \right) \left(x^2 + \frac{1}{2}x + \frac{1}{4} \right)$
- 29) $x \left(x - \frac{1}{4} \right) \left(x^2 + \frac{1}{4}x + \frac{1}{16} \right)$
- 30) $(2x + t)(2x - t)$
- 31) $(6x + t)(6x - t)$
- 32) $r^2(\pi - 1)$
- 33) 20 in.
- 34) 15 in.
- 35) 11 in.
- 36) 16 in.
- 37) 32 in.
- 38) 12 in.
- 39) 13 in., 23 in., 88 in., 6 in.
- 40) 12 in., 21 in., 70 in., 5 in.
- 41) $\left\{ -2, \frac{2}{5} \right\}$
- 42) $\left\{ -6, \frac{2}{5} \right\}$

Answer Key

Testname: Q4PREP CH.4.4 TO 4.7 V01

$$43) \left\{ -6, \frac{2}{3} \right\}$$

$$44) -\frac{4}{3}, \frac{4}{3}, 0$$

$$45) -\frac{5}{8}, \frac{5}{8}, 0$$

$$46) -\frac{2}{5}, \frac{2}{5}, 0$$

$$47) -\frac{4}{7}, \frac{4}{7}, 0$$