Math 90 Ch. 6 Practice **Name**_____

Factor completely.

1. $2xy + 16x^2y$
2. $12a^3b - 18ab^3$
3. $32rs + 16r^2s + 48r^3$
4. $m^2 + 5m + mt + 5t$
5. $p^2 – 2p + 7xp – 14x$
6. $4 – 2m – 2q + qm$
7. $p^2 – 6p – 7$
8. $5p^4q^3 – 10p^3q^3 – 75p^2q^3$
9. $7m^2 + 22m + 3$
10. $10r^2 – 33r – 7$
11. $6x^2 + 7xy – 3y^2$
12. $21z^2 + 41zy + 10y^2$
13. $162p^2 – 50$
14. $25m^2 – 49q^2$
15. $z^4 – 81$
16. $9p^2 – 30p + 25$
17. $64z^2 – 48z + 9$
18. $18z^3 – 24z^2 + 8z$
19. $125z^3 + 8$
20. $3x^3 – 192$
21. $1000p^3 – 27q^6$

Solve each equation.

22. $(x – 7)(x + 11) = 0$
23. $x^2 + 2x – 35 = 0$
24. $6m^2 – 11m = 10$
25. $q(6q – 1) = 2$
26. $(3r + 2)(4r^2 + 7r – 15) = 0$
27. $r^3 – 25r = 0$

Solve each applied problem.

28. A number is 30 less than its square. Find all such numbers.

29. The length of a rectangle is 4 inches less than twice its width. The area is 96 square inches. Find the width of the rectangle.

30. The hypotenuse of a right triangle is 4 cm less than three times the shorter leg. The longer leg is 2 cm shorter than twice the smaller leg. Find the length of the shorter leg.

31. Let N be the number of high speed internet subscribers, in millions and t, the years since 1998. The formula $N = 0.3t^2 + 0.6t$ gives the number in subscribers in the U.S. since 1998. When will the number of subscribers reach 36 million?

Answers

1. $2xy(1 + 8x)$
2. $6ab(2a^2 – 3b^2)$
3. $16r(2s + rs + 3r^2)$
4. $(m + 5)(m + t)$
5. $(p – 2)(p + 7x)$
6. $(2 – m)(2 – q)$
7. $(p – 7)(p + 1)$
8. $5p^2q^3(p – 5)(p + 3)$
9. $(7m + 1)(m + 3)$
10. $(5r + 1)(2r – 7)$
11. $(3x – y)(2x + 3y)$
12. $(7z + 2y)(3z + 5y)$
13. $2(9p + 5)(9p – 5)$
14. $(5m + 7q)(5m – 7q)$
15. $(z^2 + 9)(z + 3)(z – 3)$
16. $(3p – 5)^2$
17. $(8z – 3)^2$
18. $2z(3z – 2)^2$
19. $(5z + 2)(25z^2 – 10z + 4)$
20. $3(x – 4)(x^2 + 4x + 16)$
21. $(10p – 3q^2)(100p^2 + 30pq^2 + 9q^4)$
22. 7, -11
23. -7, 5
24. –2/3, 5/2
25. 2/3, -1/2
26. –2/3, 5/4, -3
27. 0, 5, -5
28. -5 or 6
29. 8 inches
30. 3 cm
31. Year is 2008