

SHOW ALL WORK ON THIS TEST OR ON SEPARATE PAPER. Circle answers.
TURN IN ALL WORKSHEETS. CALCULATORS ARE PERMITTED ON THIS TEST.

In 1 - 7, multiply the expressions:

1. $7(2x + 5)$ 2. $-4x(3x - 5)$ 3. $(x + 2)(x + 5)$

4. $(x - 5y)(x + 5y)$ 5. $(2x + 3)(x - 6)$

6. $(2x + 5)^2$ 7. $(x - 2)(x^2 - 3x + 7)$

In 8 - 21, factor completely.

8. $ax - ay$ 9. $3x^2 + 6x$ 10. $x^2 - 2x - 8$

11. $x^2 + 13x + 30$ 12. $x^2 + x - 30$ 13. $x^2 - 36$

14. $x^2 + 20x + 36$ 15. $3x^2 - 8x + 5$ 16. $3x^2 + 23x + 14$

17. $3x^3 + 12x^2 + 9x$ 18. $x^4 - 16$ 19. $x^4 - 13x^2 + 36$

20. $ax + bx + 4a + 4b$ 21. $x^3 - 2x^2 - 25x + 50$

In 22 - 27, solve for x .

22. $(x - 9)(x + 4) = 0$

23. $x^2 - 7x = 0$

24. $x^2 - 2x - 15 = 0$

25. $x(x + 5) = 24$

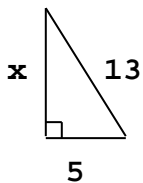
26. $x^2 = 3 + 2x$

27. $3x^2 - 27x + 60 = 0$

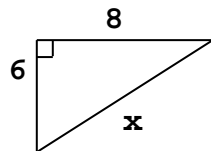
28-29. According to the Theorem of a) _____, where a and b are
b) _____ and c is the c) _____, it may be concluded
that d) _____.

In 30 - 33, find the value of x . Round to nearest hundredth if necessary.

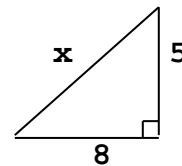
30. Find x :



31. Find x :



32. Find x :



33. Find the width of a rectangle whose diagonal is 37 and whose length is 35.

In 34 - 47, simplify using the laws of exponents. Eliminate all negative and zero exponents.

34. $x^6 \cdot x^3$

35. $\frac{x^{12}}{x^4}$

36. $(x^3)^4$

37. $\left(\frac{2x^3}{y^2}\right)^3$

38. $4x^0$

39. $(4x)^{-1}$

40. $4x^{-1}$

41. $(4x)^{-2}$

42. $\frac{12x^4}{4x^{-2}}$

43. $\frac{12x^{-6}}{8x^{-2}}$

44. $\left(\frac{5}{2}\right)^{-2}$

45. $(x^{-5}x^2)^8$

46. $(3x^3y^{-2})^3$

47. $(3x^{-3})^{-2}$

In 48 - 51, express answers in scientific notation.

48. 0.000235

49. 420,000,000

In 50 - 51, calculate (with or without a calculator).
Give answers in scientific notation.

50. $500,000 \cdot 8,000,000$

51. $\frac{0.005}{2,000,000}$

BASIC ALGEBRA EXAM 2RR Solutions

1. $7(2x+5)$ $14x+35$ 2. $-4x(3x-5)$ $-12x^2+20x$ 3. $(x+2)(x+5)$ $x^2+7x+10$ 4. $(x-5y)(x+5y)$ x^2-25y^2

5. $(2x+3)(x-6)$ $2x^2-12x+3x-18$ $2x^2-9x-18$ 6. $(2x+5)^2$ $(2x+5)(2x+5)$ $4x^2+20x+25$ 7. $(x-2)(x^2-3x+7)$ $x^3-3x^2+7x-2x^2+6x-14$ $x^3-5x^2+13x-14$

8. $ax-ay$ $a(x-y)$ 9. $3x^2+6x$ $3x(x+2)$ 10. x^2-2x-8 $(x-4)(x+2)$ 11. $x^2+13x+30$ $(x+10)(x+3)$

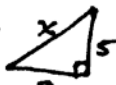
12. x^2+y-30 $(x+6)(x-5)$ 13. x^2-36 $(x-6)(x+6)$ 14. $x^2+20x+36$ $(x+18)(x+2)$ 15. $3x^2-8x+5$ $(3x-5)(x-1)$

16. $3x^2+23x+14$ $(3x+2)(x+7)$ 17. $3x^3+12x^2+9x$ $3x(x^2+4x+3)$ $3x(x+3)(x+1)$ 18. x^4-16 $(x^2-4)(x^2+4)$ $(x-2)(x+2)(x^2+4)$ 19. x^4-13x^2+36 $(x^2-9)(x^2-4)$ $(x-3)(x+3)(x-2)(x+2)$

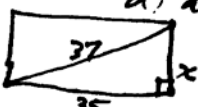
20. $ax+bx+4a+4b$ $x(a+b)+4(a+b)$ $(a+b)(x+4)$ 21. $x^3-2x^2-25x+50$ $x^2(x-2)-25(x-2)$ $(x-2)(x^2-25)$ $(x-2)(x-5)(x+5)$ 22. $(x-4)(x+4)=0$ $x=4$ $x=-4$ 23. $x^2-7x=0$ $x(x-7)=0$ $x=0$ $x=7$


24. $x^2-2x-15=0$ $(x-5)(x+3)=0$ $x=5$ $x=-3$ 25. $x(x+5)=24$ $x^2+5x-24=0$ $(x+8)(x-3)=0$ $x=-8$ $x=3$ 26. $x^2=3+2x$ $x^2-2x-3=0$ $(x-3)(x+1)=0$ $x=3$ $x=-1$

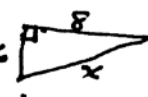
27. $3x^2-27x+60=0$ $3(x^2-9x+20)=0$ $3(x-5)(x-4)=0$ $x=5$ $x=4$

32.  $8^2+5^2=x^2$ $64+25=x^2$ $x^2=89$ $x=\sqrt{89} \approx 9.43$

28a) Pythagoras
29 a) legs
c) hypotenuse
d) $a^2+b^2=c^2$

33.  $35^2+x^2=37^2$ $1225+x^2=1369$ $x^2=144$ $x=12$

30.  $x^2+5^2=13^2$ $x^2+25=169$ $x^2=144$ $x=\pm 12$ $x=12$

31.  $6^2+8^2=x^2$ $36+64=x^2$ $100=x^2$ $x=\pm 10$ $x=10$

34. x^9 35. x^8 36. x^{12} 37. $(\frac{2x^8}{y^2})^3 = \frac{8x^{24}}{y^6}$ 38. 4 39. $(4x)^{-1} = \frac{1}{4x}$

43. $\frac{12x^{-6}}{8x^{-2}}$ $\frac{3}{2}x^{-6-(-2)}$ $\frac{3}{2}x^{-4}$ $\frac{3}{2}x^{-4} = \frac{3}{2x^4}$

44. $(\frac{5}{2})^{-2}$ $(\frac{2}{5})^2 = \frac{4}{25}$

45. $(x^{-5}x^2)^8$ $(x^{-3})^8 = x^{-24} = \frac{1}{x^{24}}$

46. $(3x^{\frac{3}{2}}y^{-2})^3$ $27x^{\frac{9}{2}}y^{-6} = \frac{27x^4y^3}{y^6} = \frac{27x^4}{y^3}$

47. $(3x^{-3})^2$ $3^2x^{-6} = \frac{9}{x^6}$

40. $4x^{-1} = \frac{4}{x}$ 41. $(4x)^2 = \frac{1}{16x^2}$ 42. $\frac{12x^4}{4x^{-2}} = 3x^6$

48. 2.95×10^{-4} 49. 4.2×10^8 50. 4×10^{12} 51. 2.5×10^{-9}