

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

In 1 - 6, multiply the expressions:

1. $-3x(2x - 8)$ 2. $(x - 3)(x - 6)$ 3. $(x - 13)(x + 2)$

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

In 7 - 9, express each number as a product of prime numbers.

7. 40 8. 72 9. 6500

In 10 - 23, factor completely.

10. $x^2 - 7x$ 11. $12x^3 + 16x^2$ 12. $x^2 - 9x + 8$

13. $x^2 - 2x - 35$ 14. $x^2 - 49$ 15. $x^2 - 10x + 25$

16. $x^2 - 17x + 30$ 17. $x^3 - 10x^2 - 24x$ 18. $x^4 - 16$

19. $xy - ay + bx - ab$

20. $x^3 - 6x^2 - 9x + 54$

21. $5x^2 - 25x + 20$

22. $5x^2 + 17x + 14$

23. $5x^2 + 37x + 14$

In 24 - 29, solve for x.

24. $(x - 5)(x + 4) = 0$

25. $x^2 - 4x - 12 = 0$

26. $x^2 - 10x = -16$

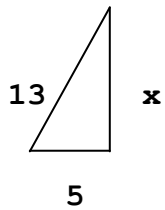
27. $x(x - 5) = 6$

28. $x^2 = 4(3 + x)$

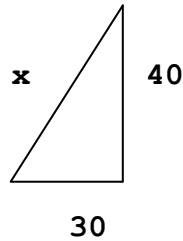
29. $x^3 - 64x = 0$

30. According to the Theorem of _____, where a and b are _____ and c is the _____, it may be concluded that _____.

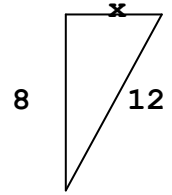
31. Find x :



32. Find x :



33. Find x :



In 34 - 46, simplify using the laws of exponents. Eliminate all negative and zero exponents.

34. $6x^0$

35. $(6x)^0$

36. $6x^{-1}$

37. $(3x)^{-1}$

38. $(3x)^{-2}$

39. $x^2 x^4$

40. $(5x^{-4})^2$

41. $\frac{24x^4}{8x^8}$

42. $\frac{8x^2}{4x^{-2}}$

43. $\left(\frac{5}{7}\right)^{-2}$

44. $\frac{(x^{-3})^4 x^6}{x^2}$

45. $(5x^2 y^{-4})^2$

In 46 - 50, express answers in scientific notation (use method of your choice).

46. 0.00048

47. 48,000,000

48. $8,500,000 \cdot 4,000,000$

49. $\frac{0.00092}{460,000}$

50. $0.000012 \cdot 0.00003$

Basic Algebra Exam 2 D* Solutions

1. $-3x(2x-8)$ $-6x^2+24x$ 2. $(x-3)(x-6)$ $x^2-9x+18$ 3. $(x-13)(x+2)$ $x^2-11x-26$ 4. $(2x+3)(x-5)$ $2x^2-10x+3x-15$ $2x^2-7x-15$

5. $(3x+5)(3x+5)$ $9x^2+30x+25$ 6. $(x-3)(x^2-4x-5)$ x^3-4x^2-5x $-3x^2+12x+15$ $x^3-7x^2+7x+15$ 7. 40 4×10 $2 \times 2 \times 2 \times 5$ $2^3 \cdot 5$ 8. 72 9×8 $3 \times 3 \times 4 \times 2$ 2×2 $72 = 2^3 \cdot 3^2$

9. 6500 65×100 $5 \times 13 \times 10 \times 10$ $2 \times 5 \times 2 \times 5$ $6500 = 2^2 \cdot 5^3 \cdot 13$ 10. $x^2-7x = x(x-7)$ 11. $12x^3+16x^2 = 4x^2(3x+4)$ 12. $x^2-9x+8 = (x-8)(x-1)$ 13. $x^2-2x-35 = (x+5)(x-7)$ 14. $x^2-49 = (x-7)(x+7)$

15. $x^2-10x+25 = (x-5)(x-5) = (x-5)^2$ 16. $x^2-17x+30 = (x-15)(x-2)$ 17. $x^3-10x^2-24x = x(x^2-10x-24) = x(x-12)(x+2)$ 18. $x^4-16 = (x^2-4)(x^2+4) = (x-2)(x+2)(x^2+4)$

19. $xy-ay+bx-ab = y(x-a)+b(x-a) = (x-a)(y+b)$ 20. $x^3-6x^2-9x+54 = x^2(x-6)-9(x-6) = (x-6)(x^2-9) = (x-6)(x-3)(x+3)$ 21. $5x^2-25x+20 = 5(x^2-5x+4) = 5(x-4)(x-1)$ 22. $5x^2+17x+14 = (5x+7)(x+2)$

23. $5x^2+37x+14 = (5x+2)(x+7)$ 24. $(x-5)(x+4) = 0$ $x=5$ $x=-4$ 25. $x^2-4x-12=0$ $(x-6)(x+2)=0$ $x=6$ $x=-2$ 26. $x^2-10x=-16$ $x^2-10x+16=0$ $(x-8)(x-2)=0$ $x=8$ $x=2$

27. $x(x-5)=6$ $x^2-5x-6=0$ $(x-6)(x+1)=0$ $x=6$ $x=-1$ 28. $x^2=4(3+x)$ $x^2=12+4x$ $x^2-4x-12=0$ $(x-6)(x+2)=0$ $x=6$ $x=-2$ 29. $x^3-64x=0$ $x(x^2-64)=0$ $x(x-8)(x+8)=0$ $x=0$ $x=8$ $x=-8$

- 30a) Pythagoras
- b) legs
- c) hypotenuse
- d) $a^2+b^2=c^2$

31. $5^2+x^2=13^2$ $25+x^2=169$ $x^2=144$ $x=\pm 12$ $x=12$ 32. $30^2+40^2=x^2$ $900+1600=x^2$ $x^2=2500$ $x=\pm \sqrt{2500}$ $x=\pm 50$ $x=50$ 33. $x^2+8^2=12^2$ $x^2+64=144$ $x^2=80$ $x=\pm \sqrt{80}$ $x=8.94$ 34. $6x^0=6$ 35. $(6x)^0=1$ 36. $6x^{-1}=6 \cdot \frac{1}{x} = \frac{6}{x}$ 37. $(3x)^{-1} = \frac{1}{3x}$ 38. $(3x)^{-2} = \frac{1}{(3x)^2} = \frac{1}{9x^2}$

39. $x^2 \cdot x^4 = x^6$ 40. $(5x^{-4})^2 = 25x^{-8}$ 41. $\frac{24x^4}{8x^8} = \frac{3}{x^4}$ 42. $\frac{8x^2}{4x^{-2}} = 2x^{2-(-2)} = 2x^4$ 43. $(\frac{5}{7})^{-2} = (\frac{7}{5})^2 = \frac{49}{25}$ 44. $(x^{-3})^4 \cdot x^6 = x^{-12} \cdot x^6 = \frac{x^6}{x^{12}} = \frac{1}{x^6}$ 45. $(5x^2y^{-4})^2 = 25x^4y^{-8} = \frac{25x^4}{y^8}$ 46. 0.00048 4.8×10^{-4} 47. 48,000,000 4.8×10^7 48. Calculator 3.4×10^{13} 49. Calculator 2×10^{-9} 50. Calculator 3.6×10^{-10}