

BASIC ALGEBRA EXAM 1D* **NAME** _____

SHOW ALL WORK ON THIS TEST OR ON SEPARATE PAPER. Circle Answers.

PART 1: (2 points each) Circle your answers!

In 1 - 15, give the value.

1. $6 + 4 \cdot 7$

2. $30 \div 10 \cdot 3$

3. $8 \div 2^2$

4. $6 + 6^2 \div 3 \cdot 2$

5. $(-7) + (-18)$

6. $(-25) + 9$

7. $(-4) \cdot 9$

8. $(-12) \cdot (-4)$

9. $(-16) \div 2$

10. $16 \div 0$

11. $(-2)^3$

12. 1^{16}

13. $(-1)^8$

14. $\frac{-8}{-2} + \frac{15}{-3} + \frac{-12}{3}$

15. $\frac{2^3 + 2^2}{2^2}$

In 16 – 19, simplify and combine like terms:

16. $8x + 15x + (-25x)$

17. $8x^2 - 3x + 5y - 13x^2 - 13x - 5y$

18. $3(5x - 4y) + 7(2x - y)$

19. $9(5x - 4) - 12(2x + 4)$

In 20 – 23, give the complete name of the property used:

20. $3 \cdot (x + 4) = 3 \cdot x + 3 \cdot 4$

21. $3 \cdot (x + 4) = (x + 4) \cdot 3$

22. $3 \cdot (x + 0) = 3 \cdot x$

23. $3 \cdot (1 \cdot x) = (3 \cdot 1) \cdot x$

In 24 - 26, given $x = 4$ and $y = -3$, evaluate the following expressions.

24. $x^2 + xy + y^2$

25. $y^2 - x^2$

26. $-x^2 + 2xy$

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PART 2: (4 points each, partial credit)**In 27 – 31, solve the equations.**

27. $3x - 6 = 30$

28. $12x - 20 = 3x + 7$

29. $5(x - 5) = 15 + 5(7 - 2x)$

30. $7 - (2x + 3) = 2(3x + 1) - 2$

31. $-3x(x - 4) - 4(x - 10) = 3(x - 1) - 3(x^2 - 1)$

In 32 - 35, solve the inequalities; graph on a number line.

32a) $3x - 6 \geq x + 12$

33. $-3x < 12$

34. $-4 < x - 6 < 2$

35. $1 \leq \frac{3-2x}{3} \leq 5$

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In 36 - 39, give equations and solve the word problems.

36. Four times a certain number is equal to the number plus 12. Find the number.
37. Find three consecutive numbers such that the first plus twice the second is 12 more than the third.
38. The length of a rectangle is 6 less than twice the width. The perimeter of the rectangle is 72 feet. Find the length and the width of the rectangle.
39. A certain number of quarters, twice as many pennies, and a number of dimes that is 4 less than the number of pennies, is worth \$3.36. How many of each coin are there?

Basic Algebra Exam 1D* Solutions

1. $6+4 \cdot 7$
 $6+28$
 34

2. $30 \div 10 \cdot 3$
 $3 \cdot 3$
 9

3. $8 \div 2^2$
 $8 \div 4$
 2

4. $6+6^2 \div 3 \cdot 2$
 $6+36 \div 3 \cdot 2$
 $6+12 \cdot 2$
 $6+24=30$

5. $-7+(-18)$
 -25

6. $(-25)+9$
 -16

7. $(-4) \cdot 9$
 -36

8. $(-12) \cdot (-4)$
 48

9. $(-16) \div 2$
 -8

10. $16 \div 0$
 Undefined

11. $(-2)^3$
 -8

12. 1^{16}
 1

13. $(-1)^8$
 1

14. $\frac{-8}{-2} + \frac{15}{-3} + \frac{-12}{3}$
 $4-5-4=-5$

15. $\frac{2^3+2^2}{2^2}$
 $\frac{8+4}{4}$
 $\frac{12}{4}=3$

16. $8x+15x+(25x)$
 $23x+(-25x)$
 $-2x$

17. $8x^2-3x+5y-13x^2-13x-8y$
 $-5x^2-16x$

18. $3(5x-4y)+7(2x-9)$
 $15x-12y+14x-63=29x-19y$

19. $9(5x-4)-12(2x+4)$
 $45x-36-24x-48$
 $21x-84$

20. Distributive Property.

21. Commutative for mult.

22. Identity for addition.

23. Associative for mult.

24. x^2+xy+y^2
 $(4)^2+(4)(-3)+(-3)^2$
 $16+(-12)+9$
 13

25. y^2-x^2
 $(-3)^2-(4)^2$
 $9-16$
 -7

26. $-x^2+2xy$
 $-(4^2)+2(4)(3)$
 $-16-24$
 -40

27. $3x-6=30$
 $+6+6$
 $\frac{3x}{3}=\frac{36}{3}$
 $x=12$

28. $12x-20=3x+7$
 $-3x+20-3x+20$
 $9x=27$
 $x=3$

29. $5(x-5)=15+5(7-2x)$
 $5x-25=15+35-10x$
 $5x-25=50-10x$
 $+10x+25+25+10x$
 $15x=75$
 $x=5$

30. $7-(2x+3)=2(3x+1)-2$

$7-2x-3=6x+2-2$
 $4-2x=6x$
 $+2x+2x$
 $4=8x$
 $\frac{4}{8}=\frac{8x}{8}$
 $x=\frac{1}{2}$

31. $-3x(x-4)-4(x-10)=3(x-1)-3(x^2-1)$
 $-3x^2+12x-4x+40=3x-3-3x^2+3$
 $+3x^2$

32. $3x-6 \geq x+12$
 $-x+6-x+6$
 $2x \geq 18$
 $x \geq 9$

$8x+40=3x$
 $-8x-8x$
 $40=-5x$
 $\frac{40}{-5}=\frac{-5x}{-5}$
 $x=-8$

33. $\frac{-3x}{-3} < \frac{12}{-3}$
 $x > -4$

34. $-4 < x-6 < 2$
 $+6+6+6$
 $2 < x < 8$

35. $3 \leq \frac{3-2x}{3} \leq 5 \cdot 3$
 $\frac{3}{-3} \leq \frac{3-2x}{-3} \leq \frac{15}{-3}$
 $0 \leq \frac{-2x}{-2} \leq \frac{12}{-2}$
 $0 \geq x \geq -6$

36. Let $x = \text{no.}$
 $4x = x+12$
 $-x-x$
 $3x=12$
 $x=4$

37. Let $x = 1^{\text{st}}$ no.
 $x+1 = 2^{\text{nd}}$ no.
 $x+2 = 3^{\text{rd}}$ no.
 $x+2(x+1) = (x+2)+12$
 $x+2x+2 = x+14$
 $-x-x$
 $2x+2=14$
 $-2-2$
 $2x=12$
 $x=6$
 $x+1=7$
 $x+2=8$

38. Let $x = \text{width}$.
 $2x-6 = \text{length}$.

$2(x)+2(2x-6)=72$
 $2x+4x-12=72$
 $+12+12$
 $6x=84$
 $x=14 \text{ feet}$
 $2x-6=22 \text{ feet}$

39.

Q	x	25	25(x)	80
P	2x	1	1(2x)	16P
D	2x-4	10	10(2x-4)	12D
			336	

$25x+2x+20x-40=336$
 $47x=376$
 $x=80$

40.

N	x	5	5x
Q	40-x	25	25(40-x)
			400

$5x+25(40-x)=400$
 $5x+1000-25x=400$
 $-20x=-600$
 $x=30$
 $40-x=10$