

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, reduce all fractions completely:

1. $\frac{30}{135}$

2. $\frac{26x^8y^6}{39x^4y^{16}}$

3. $\frac{x^2-6x+9}{x^2+3x-18}$

4. $\frac{8-x}{x^2-64}$

5. $\frac{15x^2+30x}{x^2+3x+2}$

6. $\frac{x^2-16}{x^2-3x-4} \div \frac{x^2+5x+4}{x^2-1}$

7. $\frac{6x^2-x-7}{(6x-7)(2x+5)} \cdot \frac{2x^2+x-10}{x^2-x-2}$

In 8 - 10, find the LCD only.

8. $\frac{1}{12}, \frac{1}{20}$

9. $\frac{1}{36x^7}, \frac{1}{8x^3y^2}$

10. $\frac{1}{x^2-5x+6}, \frac{1}{x^2-6x+9}$

In 11 - 17, add or subtract as indicated:

$$11. \quad \frac{7}{5x} + \frac{3}{5x}$$

$$12. \quad \frac{7}{12} + \frac{3}{20}$$

$$13. \quad \frac{x^2}{x^2-4} + \frac{2x}{x^2-4}$$

$$14. \quad \frac{x^2-6}{x+2} - \frac{4x+6}{x+2}$$

$$15. \quad \frac{3}{2x} - \frac{7}{5y}$$

$$16. \quad \frac{3}{4x^2} + \frac{5}{2x}$$

$$17. \quad \frac{3x^2+4x}{x+2} - \frac{2x^2-4}{x+2}$$

$$18. \quad \frac{5}{x^2-5x+6} + \frac{3}{x^2-9}$$

$$19. \quad \frac{x^2}{3x-9} - \frac{3}{x-3}$$

$$20. \quad \frac{7}{x^2-3x} + \frac{4}{x-3}$$

In 21 - 27, solve for x :

21. $\frac{4}{x+2} = \frac{5}{x-3}$

22. $\frac{3}{x-4} = \frac{8}{3x-12}$

23. $\frac{x+6}{x-1} = \frac{x}{4}$

24. $\frac{x+1}{3} + \frac{x-2}{2} = 6$

25. $\frac{x+1}{3} - \frac{x-2}{2} = 6$

26. $ax - b = c$

27. $ax + bx = c$

28. If a 12 ounce bag of potato chips costs \$2.29, how many ounces could you buy for \$10?

29. If a 4 pound bag of dog food sells for \$1.79, how much should you pay for 50 pounds of dog food?

30. If it takes 4 hours to solve 30 math problems, how long will it take to solve 112 problems?

BASIC ALGEBRA EXAM 3C Solutions

- $\frac{30}{135} = \left(\frac{2}{9}\right)$
- $\frac{26x^8y^6}{39x^4y^6} = \left(\frac{2x^4}{3y^0}\right)$
- $\frac{x^2-6x+9}{x^2+3x-18} = \frac{(x-3)(x-3)}{(x+6)(x-3)} = \left(\frac{x-3}{x+6}\right)$
- $\frac{8-x}{x^2-64} = \frac{-1}{x+8}$
- $\frac{15x^2+30x}{x^2+3x+2} = \frac{15x(x+2)}{(x+2)(x+1)} = \left(\frac{15x}{x+1}\right)$
- $\frac{x^2-16}{x^2-3x-4} = \frac{(x-4)(x+4)}{(x-4)(x+1)} = \left(\frac{x+4}{x+1}\right)$
- $\frac{6x^2-x-7}{(6x-7)(2x+5)} = \frac{2x^2+x-10}{(x-2)(x+1)} = \left(\frac{x-2}{x+1}\right)$
- $\frac{1}{12} > \frac{1}{20}$
- $\frac{1}{36x^7} > \frac{1}{8x^3y^2}$
- $\frac{1}{x^2-5x+6} > \frac{1}{x^2-6x+9}$
- $\frac{7}{5x^2} + \frac{3}{5x}$
- $\frac{7}{12} + \frac{3}{20}$
- $\frac{x^2}{x^2-4} + \frac{2x}{x^2-4}$
- $\frac{x-6}{x+2} - \frac{4x+6}{x+2}$
- $\frac{3}{2x(5y)} - \frac{7}{5y(2x)}$
- $\frac{3}{4x^2} + \frac{5(2x)}{2x(2x)}$
- $\frac{3x^2+4x}{x+2} - \frac{2x^2-4}{x+2}$
- $\frac{5}{(x-2)(x-3)} + \frac{3}{(x-3)(x+3)}$
- $\frac{x^2}{3(x-3)} - \frac{3 \cdot 3}{(x-3) \cdot 3}$
- $\frac{4}{x+2} = \frac{5}{x-3}$
- $\frac{3}{x-4} = \frac{8}{3x-12}$
- $\frac{x+6}{x-1} = \frac{x}{4}$
- $\frac{6(x+1)}{7} + \frac{6(x-2)}{2} = \frac{6 \cdot 6}{1}$
- $\frac{2x+2}{3} - \frac{3x+6}{2} = \frac{36}{1}$
- $ax-b=c$
- $ax+bx=c$
- $\frac{120}{2.29} = \frac{x}{10}$
- $\frac{4 \text{ hrs}}{30} = \frac{x \text{ hr.}}{112}$
- $\frac{4 \text{ pound}}{1.79} = \frac{50}{x}$
- $\frac{4 \text{ hrs}}{30} = \frac{x \text{ hr.}}{112}$

$LCD = 2^3 \cdot 3 \cdot 5 = 60$

$LCD = 2^3 \cdot 3^2 \cdot 7^2 = 72x^7y^2$

$LCD = (x-3)^2(x-2)$

$LCD = 10xy$

$LCD = 4x^2$

$LCD = (x-2)(x-3)(x+3)$

$LCD = 3(x-3)$

$\frac{8x+9}{(x-2)(x-3)(x+3)}$

$x = \frac{c}{a+b}$

$x = \frac{120}{2.29} = 52.40$

$x = \frac{c}{a+b}$

$x = 14.93 \text{ hr}$

$4x = 89.50; x = 22.38$

$x = -28$

$Ch: \frac{-27}{3} - \frac{-30}{2} = 6$
 $-9 + 15 = 6 \checkmark$

$x = 8$

Reject $x=4$ Denom $\neq 0$
No Solution

$x=8 \quad x=-3$

$x = \frac{c+b}{a}$

$\frac{120}{2.29} = \frac{x}{10}$

$2.29x = 120$

$x = \frac{120}{2.29} = 52.40$

$\frac{4 \text{ hrs}}{30} = \frac{x \text{ hr.}}{112}$

$30x = 448$

$x = 14.93 \text{ hr}$

$\frac{4 \text{ pound}}{1.79} = \frac{50}{x}$

$4x = 89.50; x = 22.38$

$\frac{4}{x+2} = \frac{5}{x-3}$
 $4(x-3) = 5(x+2)$
 $4x-12 = 5x+10$
 $-5x+12 = -5x+12$
 $-x = 22$
 $x = -22$

$\frac{3}{x-4} = \frac{8}{3x-12}$
 $3(3x-12) = 8(x-4)$
 $9x-36 = 8x-32$
 $-8x+36 = -8x+36$
 $x=4$ Denom $\neq 0$
Reject **No Solution**

$\frac{x+6}{x-1} = \frac{x}{4}$
 $x(x-1) = 4(x+6)$
 $x^2-x = 4x+24$
 $x^2-5x-24 = 0$
 $(x-8)(x+3) = 0$
 $x=8 \quad x=-3$

$\frac{6(x+1)}{7} + \frac{6(x-2)}{2} = \frac{6 \cdot 6}{1}$
 $2x+2 + 3x-6 = 36$
 $5x-4 = 36$
 $5x = 40$
 $x = 8$

$\frac{2(x+1)}{3} - \frac{3(x-2)}{2} = \frac{6 \cdot 6}{1}$
 $2x+2 - 3x+6 = 36$
 $-x+8 = 36$
 $-x = 28$
 $x = -28$

$ax-b=c$
 $+b \quad +b$
 $ax = c+b$
 $\frac{ax}{a} = \frac{c+b}{a}$
 $x = \frac{c+b}{a}$

$ax+bx=c$
 $x(a+b) = c$
 $\frac{x(a+b)}{a+b} = \frac{c}{a+b}$
 $x = \frac{c}{a+b}$

$\frac{120}{2.29} = \frac{x}{10}$
 $2.29x = 120$
 $x = \frac{120}{2.29} = 52.40$

$\frac{4 \text{ hrs}}{30} = \frac{x \text{ hr.}}{112}$
 $30x = 448$
 $x = 14.93 \text{ hr}$

$\frac{4 \text{ pound}}{1.79} = \frac{50}{x}$

$4x = 89.50; x = 22.38$