

**Palomar College Math Placement Test Study Guide**  
**Intermediate Algebra**

**Topic 11: Rational Expressions**

1. Simplify:  $\frac{x^2 + 10x + 16}{x + 2}$

2. Simplify:  $\frac{x - 5}{25 - x^2}$

3. Add:  $\frac{1}{x + 3} + \frac{2}{x + 1}$

4. Subtract:  $\frac{1}{x^2 - 2x - 10} - \frac{4}{x - 5}$

5. Multiply:  $\frac{2x^2y}{x^2 - 9} \cdot \frac{2x + 6}{4xy^2}$

6. Divide:  $\frac{2x - 8}{x^2 + 2x - 8} \div \frac{x^2 - 2x - 8}{4 - x^2}$

7. Simplify:  $\frac{1 - \frac{1}{x^2}}{1 + \frac{1}{x}}$

8. Simplify:  $\frac{\frac{y}{y+1} - \frac{1}{y}}{\frac{y}{y+1} + \frac{1}{y}}$

9. Solve:  $\frac{-1}{x + 4} = \frac{2}{x + 4} + 3$

10. Solve:  $\frac{1}{2} - \frac{1}{x} = \frac{1}{3}$

11. Solve the proportion:  $\frac{35}{126} = \frac{10}{x}$

12. Solve:  $\frac{4}{x+4} = \frac{x-2}{x}$

13. Solve for x:  $\frac{1}{x} = a + b$

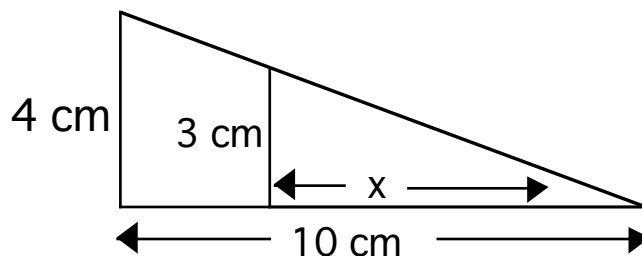
14. Solve for x:  $y = ax + 3x$

15. Solve for T:  $PV = nRT$

16. A medication is given at a rate of 12.3 grams for every 50 pounds of bodyweight. How much should be given to 135 pound person?

17. On a map, 1 inch represents 8 miles. If the distance between two locations on the map is 7.5 inches, what is the actual distance between the two locations?

18. Find x.



19. x is inversely proportional to y. Find the constant of proportionality if  $x = 5$  when  $y = 10$ .

20. Ben can wash the dishes in 45 minutes. Alex takes 40 minutes to wash the same dishes in 35 minutes. How long would it take Ben and Alex to wash the dishes working together?

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### Intermediate Algebra

#### Topic 11: Rational Expressions

##### Answers:

1.  $x + 8$
2.  $-\frac{1}{x+5}$
3.  $\frac{3x+7}{(x+1)(x+3)}$
4.  $\frac{-4x-7}{(x-5)(x+2)}$
5.  $\frac{x}{y(x-3)}$
6.  $-\frac{2}{x+4}$
7.  $\frac{x-1}{x}$
8.  $\frac{y^2 - y - 1}{y^2 + y + 1}$
9.  $x = -13/3$
10.  $x = 6$
11.  $x = 36$
12.  $x = 4$  or  $x = -2$
13.  $T = \frac{PV}{nR}$
14.  $x = \frac{1}{a+b}$
15.  $x = \frac{y}{a+3}$
16. A 150 pound person should be given 33.21 grams of medication.
17. The distance between the two locations is 60 miles.
18.  $x = 7.5$  cm
19. The constant of proportionality is 50.
20. It would take Ben and Alex 25 minutes to wash the dishes working together.