

Use algebra to solve the following problems:

- (1) The product of a number and three less than the number is 28. What is the number?
  
- (2) Three consecutive even numbers add up to 72. What are they?
  
- (3) Park rangers caught, tagged, and released 200 elk at a wildlife refuge. Two weeks later they captured 150 elk and 5 of them had tags. Provide an estimate for the number of elk in the refuge.
  
- (4) Your quiz grades are 85, 72, 69, and 78. You have one more quiz to take. What range of grades will get you a C? What range for a B?
  
- (5) A job pays \$50 per 8-hour shift plus 15% commission on sales. What sales would you need in a single 8-hour shift in order to exceed minimum wage of \$7.25 per hour?
  
- (6) The average price of a movie ticket generally follows the trend  $0.172x + 2.69$ , where  $x$  is the number of years since 1980. In which year should we expect the average price of a movie ticket to exceed \$20?

(7) Solve these equations:

a.  $x^2(3-x) = 0$

d.  $\frac{x+1}{x-5} = 1$

b.  $2x^3(x^2-1) = 0$

e.  $\frac{x(x+1)}{x-5} = 0$

c.  $(x-5)(2x+2) = 0$

f.  $\frac{3+x}{x-2} = 2$

(8) Use the fundamental principles of multiplication and division to draw as many conclusions as possible about the parameters in the following equations

a.  $(a+1)(2-b) > 0$   
Conclusion(s):

e.  $\frac{x\sqrt{y+z}}{w} \leq 0$   
Conclusion(s):

b.  $(c-d^2)(j+k) \leq 0$   
Conclusion(s):

f.  $\frac{p(q+r)}{t(x-g)} = 0$   
Conclusion(s):

c.  $\frac{s(t+r)}{q} = 0$   
Conclusion(s):

g.  $\frac{k}{1+a} < 0$   
Conclusion(s):

d.  $\frac{s(t+r)}{q} = 1$   
Conclusion(s):

h.  $\frac{2}{1+a} > 0$   
Conclusion(s):

(9) As a group, write a story that utilizes the algebraic process of Reverse/Inverse but that has no mathematical context. Do it on a separate page. (just like when we described how Mitchum gets to and from class)