

**PROBLEM SOLVE – WORK BACKWARDS  
PUZZLE**

Name: \_\_\_\_\_  
DATE: \_\_\_\_\_

**How Does a Beaver Know Which Tree to Cut Down?**

**Problem Solving Strategies.** There are lots of problem solving strategies. Guess and Check, Draw a Diagram, Make a List, Use a Table, Use Logic, Use a Formula, Solve a Simpler Version, Solve Step by Step (Iterations), etc. Mixing and matching the different strategies works well also. Another strategy is to **Work Backwards**, ‘undoing’ what was done.

*Puzzle Instructions. Try working backward to help solve each problem. Find your answer in the answer box. Write the letter of the answer in each space containing the number of the problem.*

(F) 38	(W) 24	(T) 67	(R) 35	(B) 144 lb	(V) 80													
(S) 72	(D) 84	(I) \$118	(L) 194	(N) \$55	(A) 28													
(H) \$60	(C) 152 lb	(E) 22	(P) \$50	(O) 183	(U) \$98													
9	10	1	3	10	6	7	6	4	2	8	6	10	6	3	10	6	9	5

1. Susan made a deposit of \$74 to her bank account. She then had \$192 in the account. How much money was in the account before the deposit?

She has \$192 now, so un-add the \$74 she had put in.  $\$192 - \$74 = \$118$

check:  $118 + 74 = 192 \checkmark$

2. Aram gave Steve 38 of his baseball cards. He then had 145 cards left. How many did he have to begin with?

3. Mark weighs half as much as his father. If Mark weighs 76 pounds, how much does his father weigh?

Mark is 76 lb. Undo the half by doubling  
76 doubled is 152. Dad is 152 lb  
check:  $\frac{1}{2} \cdot 152 = 76 \checkmark$

4. Karen's uncle said, "If you add 10 to my age and then double the sum, the result is 90." How old is Karen's uncle?

5. Ms. Shoe kept 2 meatballs for herself, then divided the others equally among her 14 children. If each child got 5 meatballs, how many did Ms. Shoe have to begin with?

Before sharing there was  $5 \cdot 14 = 70$  meatballs.  
Add back the two Ms Shoe took for herself  
gives 72 meatballs from the start.  
 $(5 \cdot 14) + 2 = \underline{72}$   
check:  $(72 - 2) \div 14 = 5 \checkmark$  check frontwards

6. A burglar trying to escape police got on the elevator in a tall building. He went up 8 floors, down 4 floors, up 3 floors, down 7 floors, and down 2 floors. If he finished on Floor 20, what floor did he start on?

7. Bob's mother asked how he had done on a math test. Bob said, "If you multiply my score by 3, then subtract 40 from that answer, then divide by 2 you will get exactly 100." What was Bob's score?

8. Keith bought a belt for \$9 and a shirt that cost 4 times as much as the belt. He then had \$10. How much money did Keith have before he bought the belt and shirt?

9. Mom had just filled the cookie jar when the three children went to bed. That night, one child woke up, ate half the cookies, then went back to bed. Later, the second child woke up, ate half the remaining cookies, then went back to bed. Still later, the third child woke up, ate half the remaining cookies, leaving 3 cookies in the cookie jar. How many cookies were in the jar to begin with?

10. Ms. Match went to a store, spent half of her money and then \$10 more. She went to a second store, spent half the money she had left and then \$10 more. She then had no money left. How much money did Ms. Match have when she started out?

**ALGEBRA.** Of course, the more effective way to solve these is with algebra. Example from Question 7.

Let  $x$  be Bob's score  $(3x - 40) \div 2 = 100$

$$3x - 40 = 200$$

$$3x = 240$$

$$x = 80$$

which really is just undoing what was done to Bob's score

Or perhaps question 10 would be more easily solved using Algebra instead like this:

Let  $x$  = how much she started with

$$\left[ \left[ (x \cdot \frac{1}{2}) - 10 \right] \cdot \frac{1}{2} \right] - 10 = 0$$

$$\left[ (x \cdot \frac{1}{2}) - 10 \right] \cdot \frac{1}{2} = 10$$

$$(x \cdot \frac{1}{2}) - 10 = 20$$

$$(x \cdot \frac{1}{2}) = 30$$

$$x = \$60$$

Brackets are important!

Check!  $\rightarrow \left( \left[ (60 \cdot \frac{1}{2}) - 10 \right] \cdot \frac{1}{2} \right) - 10 = ?$

$$\left( \left[ 30 - 10 \right] \cdot \frac{1}{2} \right) - 10$$

$$20 \cdot \frac{1}{2} - 10 = 0$$

Yes! 60 works