

Reminders for Word Problems

Be sure to define variable(s)

- pick a letter or variable expression to represent the unknown(s) and state what it represents for every problem
- if using 2 different letters to represent unknowns, you must write 2 eqns (system of eqns) in order to solve

It is often helpful to organize information in a table before setting up the equation.

Be sure that you answer the question & label your answer.

Check – is your solution logical?

Different Types of Word Problems

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|-----------------------------|--|
| Area – Border Prbs | Area of total figure – Area of smaller figure = Area border |
| Coin Prbs | Amount of coins • value of coins = Total Value |
| Consecutive Integer Prbs | $x, x + 1, x + 2 \rightarrow$ 3 consecutive integers $x, x + 2, x + 4 \rightarrow$ 3 consecutive even integers $x, x + 2, x + 4 \rightarrow$ 3 consecutive odd integers |
| Cost | Cost = # items • price/item |
| Digit Prbs | Define variables as follows: x - tens digit y – ones (unit) digit $10x + 1y \rightarrow$ original # $10y + 1x \rightarrow$ # when digits reversed then follow the clues in problem to write 2 eqns. |

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|----------------------------|--|------------------|---------------------|----------------------------|-------------------------------|------------------|---------------------|--------------------------|-------------------------|------------------------|----------------------------|
| Distance Prbs | <p>Rate • time = distance</p> <p><u>Round Trip</u> Distance there = Distance back</p> <p><u>Opposite Directions</u> Distance by A + Distance by B = Total Distance apart</p> <p><u>Same Direction – catch up</u> Distance by A = Distance by B</p> <p><u>Same direction – how much further ahead (A is ahead)</u> Distance A – Distance B = Distance apart</p> | | | | | | | | | | |
| Income | Income = # hours worked • wages/hour | | | | | | | | | | |
| Interest Prbs | <p>$I = prt$</p> <p>Interest inv 1 + Interest inv 2 = Total Interest</p> <p>Interest inv 1 + amount short = Interest inv 2</p> | | | | | | | | | | |
| Mixture Prbs | <p>Amount • % of _____ = Total amount _____</p> <p>Amount • price/_____ = Total cost</p> | | | | | | | | | | |
| Total Value | Total Value = # of items • value/item | | | | | | | | | | |
| Wind/Current Problems | <p>Use Distance formula -> $d = rt$ with twist - define 2 variables for rate:</p> <p>Wind or current will speed you up (when going with them) or slow you down (when going against them)</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;"><u>Wind prbs</u></td> <td style="width: 50%;"><u>Current prbs</u></td> </tr> <tr> <td>r- rate of plane w/no wind</td> <td>r – rate of boat w/no current</td> </tr> <tr> <td>w – rate of wind</td> <td>c – rate of current</td> </tr> <tr> <td>r + w -> rate downstream</td> <td>r + c -> rate with wind</td> </tr> <tr> <td>r – w -> rate upstream</td> <td>r – c -> rate against wind</td> </tr> </table> | <u>Wind prbs</u> | <u>Current prbs</u> | r- rate of plane w/no wind | r – rate of boat w/no current | w – rate of wind | c – rate of current | r + w -> rate downstream | r + c -> rate with wind | r – w -> rate upstream | r – c -> rate against wind |
| <u>Wind prbs</u> | <u>Current prbs</u> | | | | | | | | | | |
| r- rate of plane w/no wind | r – rate of boat w/no current | | | | | | | | | | |
| w – rate of wind | c – rate of current | | | | | | | | | | |
| r + w -> rate downstream | r + c -> rate with wind | | | | | | | | | | |
| r – w -> rate upstream | r – c -> rate against wind | | | | | | | | | | |
| Work Prbs | <p>Work rate = $\frac{1 \text{ job completed}}{\text{time to complete job alone}}$</p> <p>work rate • time = work done</p> <p>Work done by A + Work done by B = 1 job completed</p> | | | | | | | | | | |

