

3-5-3 Distribution Word Problems

Word problems cause apprehension and are a bane for most math students, but they are the most important part of math classes. You will never meet someone on the street who will ask you to solve an equation. You will have certain information and need to think how to best represent that information mathematically. Word problems encountered in textbooks for the most part are contrived and not realistic, but they do give practice in reasoning. Word problems are not intended to be easy. Think of this as weight training for your brain.

There are a few steps that can help you solve these problems.

Read Carefully: Read each problem several times. Then read each phrase and decipher what it means. Understand what is asked and what is given.

Organize the information: Draw pictures. Make tables, charts or diagrams.

Digest the content: Mentally put yourself in the situation described by the problem. Think what would happen if part of the problem were changed.

Set up an equation: Decide what you will assign to a variable. Find a relationship between that variable and other parts of the problem.

Check: Always check to see if the answer you get is reasonable and meets the criteria given in the problem.

Example: One item is 35% off. Another item that costs \$5 less than the original price of the first is 40% off. The total before tax is \$540

Let x be one item.

The other is then $x-5$

Each is on sale so subtract the discount.

$$x - 0.35x \qquad (x - 5) - 0.40(x - 5)$$

Add the two to get the total $x - 0.35x + (x - 5) - 0.40(x - 5) = 540$

Practice:

- One item costs three times as much as \$5 less than another item. Together the items total is \$500. What is the cost of each item?
- Jack makes a frame with one side twice as long as the sum of the other side and 4. The perimeter is 75 inches. What are the dimensions of the frame?
- Randy makes twice as much as Janet and Janet makes \$3 more per hour than Todd. It costs the boss \$33 per hour to have all three work at once. How much does each employee make per hour? Hint: Let x be Todd's wage per hour.
- Elaine bought a racket and a can of balls. If the racket is three times as much as the sum of a can of balls and \$9 and the total before tax was \$184, how much was the racket?
- A quilt uses two inch (finished width) squares. The length is 3 inches more than $\frac{5}{3}$ times the width. How many two inch squares are needed to finish the top of the quilt if the ruffled edge must be 278 in. long. Hint: Draw a picture.

- f) 40% of the students in class A and 30% of students in class B attended the rally. There are twice as many in class B as the sum of the number in class A and 5. 33 students attended the rally. How many students in each class? Hint: Let x be students in class A. $2(x+5)$ are in B.
- g) One side of a rectangle is 15 inches. The other side is five times the quantity of twice a number plus three. The area is 900 sq. in. Find the number.
- h) We have a 30 lb bag of mixed nuts that are 25% cashews. How many pounds of cashews are in the bag?
 A 12 lb bag of cashews is what percent cashews?
 If the bags are mixed how many pounds together, and what is the percent cashews?
 $.25(30) + 1.00(12) = x(30+12)$
 Percent times amount + percent times amount = total Percent times total amount.
- i) How many pounds of 15% cashew mix must be added to 28 lbs of 50% cashew mix to get a 30% cashew mix? Let x be the pounds to add.
 $.15x + (.50)(28) = .30(x+28)$
- j) How many pounds of \$3.50 per pound mix must be added to 15 lbs of \$7.00 per pound mix to get a \$5.00 per pound mix? Hint: This is the same kind of question as i.
- k) Janet has 3 dimes and 7 quarters how much money does she have?
 $.10(3) + .25(7) = x$ value times amount + value times amount = total
- l) Peter has 3 more dimes than quarters. He has \$3.10 How many of each coin does he have?
- m) Anne has 5 more 3 cent stamps than 20 cent stamps. The total face value is \$3.60. How many of each kind of stamp does she have?
- n) Adult tickets are \$11. Student tickets are \$8. Tickets for children under 11 are \$5 each. The theater sold 3 times as many adult tickets as child tickets. They sold 5 more child tickets than student tickets. The gate was \$2490. How many children, adults and students were in attendance? Hint: Let x be the number of students.
- o) Tammy bought a dress that originally cost \$18 more than the shoes she bought to match. Both items were 45% off and the total before tax was \$62. How much did the shoes and dress cost originally?
- p) One item is three times the difference of the original cost of another item and \$30. The sale is for 35% off the total. The result is \$520.54. What did the items cost originally?