

Percentages

One to One Tutoring

May 10, 2010

Use a calculator as needed.

1. Working with percentages.

- (a) What is 11% of 50?
- (b) A shirt costs \$20 but goes on sale for 16% less. What is the sale price of the shirt?
- (c) A shirt costs \$20 while on sale. If the sale is 16% off, what did the shirt cost originally?
- (d) I eat 12% more than my brother. My brother eats 55% less than my dad. How much more does my dad eat than me?
- (e) A company offers you a job for \$20,000 with a 5% raise each year for the first 5 years. What will be your salary after those five years have passed?
- (f) On Monday, a supermarket dropped its prices by 10% from their normal values. But, on Tuesday it set them back to normal. What percentage did the prices increase on Tuesday?
- (g) A vacation costs x dollars but is subject to taxes and discounts. The discount is 5% and the tax is 10%. Consider these three options. I apply the discount first, then add the tax. I add the tax first and then apply the discount. I just charge you a flat fee of $1.04x$ dollars.

(h) You have a coupon that lets you buy 6 hamburgers for price of 4. It expires today. You notice that the restaurant is having a special that day which lets you save 30% on three hamburgers. You need 6 burgers for your family. Should you use your coupon, or should you take advantage of the three hamburger deal twice?

(i) You have a coupon that lets you save 10 cents for each apple you buy, with no limit. You have another coupon which lets you save 10% on each apple you buy, with no limit. The store has agreed to let you use both coupons but they insist on applying the 10% discount first and then subtracting the 10 cents per apple. Is the store giving you the best deal? In other words, would it be better to apply the coupons in the opposite order? Does choosing the best deal depend on the price of apples or how many apples you buy?

2. Working with Venn diagrams. Suppose that there is an animal shelter that has 100 cats. Half of the cats have some white fur. 60% of the cats have some black fur. 10 cats both black and white fur. 10 of the cats weigh over 15lbs. $\frac{1}{5}$ of the cats weight less than 10lbs. All of the cats weighing under 10lbs have some black fur on them. All of the cats weighing over 15lbs. have no white fur on them. In each of the following problems, find the exact answer, or, if not enough information is given, try to give a range of possible answers. (hint: in most cases there isn't enough information to find an exact answer.)

(a) What percentage of cats have no black or white fur?

(b) How many cats weight 11lbs?

(c) How many cats weight less than 10lbs and have no black fur?

(d) How many of the cats over 10lbs have some black fur on them?

(e) What percentage of cats with some white fur weigh less than 10 lbs?