

1. (10pts) a) 75 is 64% of what?

$$A = PB \quad 75 = 0.64 \cdot B$$

$$B = \frac{75}{0.64} = 117.1875$$

b) 17 is what percent of 57?

$$17 = P \cdot 57$$

$$P = \frac{17}{57} = 0.298 -$$

$$29.824561\%$$

2. (6pts) You bought a nice set of silverware for \$125. If sales tax is 6%, what is the total cost?

$$0.06 \cdot 125 = 7.5$$

$$125 + 7.5 = \$132.50 \text{ total cost,}$$

3. (12pts) In 2008, Jane filed a tax return separately from her husband. Her total income was \$45,900, she deposited \$1500 into a retirement account, paid \$850 in property taxes on a property she inherited, and donated \$550 to charity. Use the table on page 448 of our book to first determine Jane's taxable income (don't forget the exemption) and then find the tax on this income.

Adjustments, deductions, exemptions:

$$\begin{array}{r} 1500 \\ 850 \\ + 550 \\ \hline 2900 \\ + 3500 \\ \hline 6400 \end{array}$$

$$\text{Taxable income} = 45,900 - 6,400 = 39,500$$

Tax on 39,500 is

$$0.10 \cdot 8025 + 0.15(32,550 - 8025) + 0.25(39,500 - 32,550)$$

$$= 802.50 + 0.15 \cdot 24,525 + 0.25 \cdot 6,950$$

$$= 6218.75$$

Notes: A taxpayer may take the standard deduction of \$5450 instead of their deductions (850 + 550). Then taxable income is

$$45,900 - (1500 + 5450 + 3500) = 35,450$$

and tax on it is 5206.25

4. (12pts) At a building-supply store, a certain type of brick costs \$156 per cube of bricks. Due to lack of demand, the store decided to reduce the price of these bricks by 25%. Not long afterwards, a strong storm that blew through the area created demand for building supplies and the store raised the price of the bricks by 15%. How much does a cube of bricks cost now?

Original price: 156.

$$\text{discounted price} = 0.75 \cdot 156 \\ = 117$$

$$\text{Price after price increase: } 1.15 \cdot 117 = 134.55$$

$$\text{Or: } 0.25 \cdot 156 = 39$$

$$156 - 39 = 117$$

$$0.15 \cdot 117 = 17.55$$

$$117 + 17.55 = 134.55$$

5. (10pts) How much money should you deposit in a simple-interest account bearing 2.25% if you would like to have \$1500 in three years? How much of the final \$1500 is from interest?

$$P = A(1 + rt)$$

$$1500 = A(1 + 0.0225 \cdot 3)$$

$$1500 = A \cdot 1.0675 \quad | \div 1.0675$$

$$A = \frac{1500}{1.0675} = 1405.15222$$

$$\text{Round up to } \$1405.16$$

$$\text{Interest is } 1500 - 1405.16 = 94.84$$

6. (10pts) Emily borrowed \$1200 from Amanda and repaid her five months later with \$1400. What simple annual interest rate did Emily pay on this transaction?

$$P = A(1 + rt)$$

$$1400 = 1200 \left(1 + r \cdot \frac{5}{12}\right) \quad | \div 1200$$

$$1.166\ldots = 1 + r \cdot \frac{5}{12} \quad | -1$$

$$0.1666 = r \cdot \frac{5}{12} \quad | \cdot \frac{12}{5}$$

$$r = 0.4$$

$$\text{Annual interest rate is } 40\%$$