



Math Olympiad and Problem Solving Programs

F130 - Advanced Problem Solving

Problem Set 19.2 - Percentage

Name:

Date:

1. $\boxed{\$52.50}$
2. If 20% of the games are Johnny's, he has $0.20 \times 50 = 10$ video games. That means the rest of the games ($50 - 10 = 40$) are split between Tyler and Edward. If 60% of the remainder (in other words, of the 40) are Tyler's, then Tyler has $0.60 \times 40 = 24$, and the rest are Edward's. So Edward has $40 - 24 = \boxed{16}$
3. $\boxed{\$18}$
4. $\boxed{\$129}$
5. Let's find each percentage of honey in liters, and then calculate how much she earned on that honey.
30% at \$2.00 a liter: $0.30 \times 300 = 90$ liters at \$2.00 a liter = $90 \times \$2 = \180 .
25% at \$1.50 a liter: $0.25 \times 300 = 75$ liters at \$1.50 a liter = $75 \times \$1.50 = \112.50 .
10% at \$1.25 a liter: $0.10 \times 300 = 30$ liters at \$1.25 a liter = $30 \times \$1.25 = \37.50 .
the rest at \$1.00 a liter: $300 - 90 - 75 - 30 = 105$ liters at \$1.00 a liter = $105 \times \$1 = \105 .
Her total sale = $\$180 + \$112.50 + \$37.50 + \$105 = \boxed{\$435}$
6. 25% of \$1400 is $0.25 \times \$1400 = \350 . This means that the salesman marked the price of the refrigerator at $\$1400 + \$350 = \$1750$. Then he marked it down 10%. 10% of \$1750 is $0.10 \times \$1750 = \175 . So he took \$175 off the price, so he sold it for $\$1750 - \$175 = \boxed{\$1575}$
7. 30% scored gold: $0.30 \times 600 = 180$ scored gold. That means $600 - 180 = 420$ didn't score gold.
20% of the remainder (or of 420) scored silver: $0.20 \times 420 = 84$ scored silver. That means $420 - 84 = 336$ didn't score silver.
50% of the new remainder (or of 336) scored bronze: $0.50 \times 336 = \boxed{168}$ scored bronze
8. if 40% are blue, there are $0.40 \times 40 = 16$ that are blue. If I ate 50% of the blue, I ate $0.50 \times 16 = 8$ blue MnM's. Now there are 8 blue MnM's left in a bag of 32 MnM's. So the new percentage of blue MnM's is $8 \div 32 = \boxed{25\%}$
9. Steven has 100% of Steven's firecrackers (duh) and Stephanie has 35% of Steven's firecrackers. That means that together, they have $100\% + 35\% = 135\%$ of Steven's firecrackers. Now we divide 108 by 135% to find out how many firecrackers Steven has. $108 \div 1.35 = \boxed{80}$
10. If 70% are green, $720 \times 0.70 = 504$ are green, and the rest ($720 - 504 = 216$) are red. Now Federico bought more green marbles, and the red is 20%. So that means that 216 is 20% of some number. To help us figure this out, we write 20% as a fraction: $\frac{20}{100} = \frac{1}{5}$. So 216 is $\frac{1}{5}$ of some big number. What do we do to find out what that number is? $5 \times 216 = 1080$. So 216 is $\frac{1}{5}$ of 1080. So now the total marbles Federico has is 1080. He used to have 720. So he bought $1080 - 720 = \boxed{360}$ more marbles.