Math MANIA Answers:

Problem #1 A Lighting Solution

Answers:

1. 25 watts ÷ 1,000 = 0.025 kilowatts
   0.025 kilowatts x 5 hours = 0.125 kilowatt hours. Jane's family uses 0.125 kWh.
2. 100 watts ÷ 1,000 = 0.1 kilowatts
   0.1 kilowatts x 5 hours = 0.5 kilowatt hours. Sam's family uses 0.5 kWh.
3. The 100-watt incandescent bulb.
4. 0.125 kWh x $0.12 = 0.015 or 1.5 cents.
5. 0.5 kWh x $0.12 = 0.06 or 6 cents.
6. Sam's family uses 0.375 more kWh than Jane's family. 0.5 – .125 = .375 kWh.
7. Sam's family spends 4.5 cents more than Jane's family. 6 – 1.5 = 4.5 cents.
8. 4.5 cents x 365 days = $14.

Problem #2: Smart Choice

Answers:

1. Standard clothes washer:
   390 loads x 2 kWh = 780 kWh in one year
   780 kWh x 12 cents ($0.12) = $93.60 in one year

   Energy Star–labeled clothes washer:
   390 loads x 1 kWh = 390 kWh in one year
   390 kWh x 12 cents ($0.12) = $46.80 in one year

   $93.60 – $46.80 = $46.80

   A family would save $46.80 per year.
2. Standard TV set:
   75 W ÷ 1,000 = 0.075 KW
   0.075 KW x 6 hrs. = .45 kWh
   6 W ÷ 1,000 = 0.006 KW
   0.006 KW x 18 hrs. = 0.108 kWh
   0.45 kWh + 0.108 kWh = 0.558 kWh per day
   0.558 kWh x 365 days = 203.67 kWh per year
   203.67 kWh x 12 cents ($0.12) = $24.44 per year

   Energy Star–labeled TV set:
   70 W ÷ 1,000 = 0.07 KW
   0.07 KW x 6 hrs. = .42 kWh
   2 W ÷ 1,000 = 0.002 KW
   0.002 KW x 18 hrs. = 0.036 kWh
   0.42 kWh + 0.036 kWh = 0.456 kWh per day
   0.456 kWh x 365 days = 166.44 kWh per year
   166.44 kWh x 12 cents ($0.12) = $19.97 per year

   $24.44 – $19.97 = $4.47

   A family would save $4.47 per year.

Now use your graphing skills to create bar graphs to represent the costs of using standard appliances compared with using Energy Star–labeled appliances.