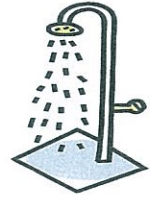Name _____

Water Smart – Math Smart *(Answers)*

Here are some examples of ways we can save water. Answer these questions using the given information.

Example 1 –Shower and Bath: Old showerheads used about 4 gallons of water per minute. New WaterSense showerheads use 2 gallons per minute. How much water can you save in a 5-minute shower if you replace your old showerhead with one of the new low-flow showerheads?
What you know:

What you are trying to figure out:

1. Water used in a 5-minute shower with an old showerhead = **20** gallons
   $5 \times 4 = 20$

2. Water used in a 5-minute shower with the new showerhead = **10** gallons
   $5 \times 2 = 10$

3. How much did you save? **10** gallons
   $20 - 10 =$

4. **CHALLENGE:** If you showered most days, say 300 days a year, how much water would you save by switching to a low-flow showerhead at the beginning of the year? (See question 3)

10×300

what if you took a bath everyday?
$10 \times 365 = 3,650\,gal$

3,000 gallons saved per year

A bathtub can hold about 40 gallons of water with you in it. What uses more water? Use the symbol <,>, or = in the circle.

40	**>**	**10**
gallons per tub (filled)	>, <, =	gallons per 5-minute shower (2 gallons per minute)
20	**>**	**10**
gallons per tub (half-filled)	>, <, =	gallons per 5-minute shower (2 gallons per minute)
20	**=**	**20**
gallons per tub (half-filled)	>, <, =	gallons per 5-minute shower (4 gallons per minute)

Example 2 – Brushing Teeth: If you turn the water off when you brush your teeth, you can save 1 ½ gallons of water in the morning and another 1 ½ gallons of water in the evening.

1. How much water do you save in a year when you turn the water off while brushing your teeth?

What you know: Water saved in one day, number of days in a week, number of weeks in a year

What are you trying to figure out: *Saved water in a year*

Explain what steps you take and why. ① *water saved in one day* $1\frac{1}{2}+1\frac{1}{2}=3$ *gal*
② *Water saved in one week = 7×3 = 21 gal*
③ *Water saved in 52 weeks = 52×3 = 156 gal*

$\boxed{156}$ gallons of water saved in a year by turning water off when you brush

Example 3 - Toilets: New High efficiency toilets only use 1 ¼ gallons of water per flush. Most people flush about 4 times a day, but you may flush more or less.

1. How many gallons would you use in one day? Explain what steps you take to solve this.

4 flushes × 1¼ = $\begin{array}{c} 4×1=4 \\ 4×\frac{1}{4}=1 \end{array}$ *4+1 = 5 gal*

$\boxed{5}$ gallons of water you would flush every day using a new high-efficiency toilet

2. Old toilets used 5 gallons of water for each flush. How much water would you flush each day using an old toilet? Explain what steps you take to solve this.

4×5 = 20 gal

$\boxed{20}$ gallons of water you would flush each day using an old toilet

3. Compare the water use. How much water is saved each day with the new toilet? Explain what steps you used and why.

20 gal – 5 gal = 15 gal

$\boxed{15}$ gallons saved each day by using a low-flow toilet

Example 4 – Nozzle: When you put a nozzle on the hose outside, the water only flows when you squeeze the handle. Water in your outside hose flows at about 20 gallons per minute. How much water would you save if the nozzle turned the water off for these times?

Number of minutes the hose does not flow	Gallons of water saved
1	20
5	100
8	160
10	200