Which are Modeling Tasks?

Here are 11 math tasks. Which do you think are examples of mathematical modeling tasks? Explain why each one is or isn't. There is space for you to make notes.

Structure: Think – Pair – Share at your table – Share in the whole group

Modeling Task List [(T) = from a textbook)]

1. John found the data in the table below about his favorite redwood tree. He wondered if he could use it to predict the height of the tree at other points of time.

Number of Years after Planting	3	4	5
Height of Tree (in feet)	17	21	25

John decided to find out more about his favorite redwood tree by graphing the data. What does the graph look like? Does the graph represent a proportional relationship? Justify your answer. (T)

2. When a car skids to a stop, the length of the skid d (in feet) for a car traveling at speed s (in miles per hour) is given by $d = \frac{1}{30f}s^2$. If you have only 120 feet to stop safely, what is the maximum speed you should be driving under dry conditions, when $f = 0.8$? How does your answer change under wet conditions, when $f = 0.4$? (T)

3. A dime is 0.135 cm. thick. How tall would a stack of 100 dimes be? (T)

4. How much paint will I need to paint my bedroom?

5. John and Dave are building a rectangular pen next to the barn for their goat, Ginny. They plan to use one 60-foot wall of the barn as part of the pen, so they

only need to build the remaining three sides. They want the width of the pen to be half of the length. How much fencing will they need to complete Ginny's pen? Can you find more than one answer? (T)

6. Use Base-10 blocks to solve 4×28. (T)

7. Following this model
$\frac{2}{3}+\frac{1}{2}=\frac{2\times 2}{3\times 2}+\frac{1\times 3}{2\times 3}=\frac{4}{6}+\frac{3}{6}=\frac{7}{6}$, find $\frac{3}{4}+\frac{1}{3}$.

8. Darn, I just discovered a leak under my kitchen sink. Before the floor got too wet, I quickly placed a glass jar with diameter 8 cm. and height 12 cm. under it because I had to go out. When I returned 90 minutes later, the jar was nearly full. I had to go out again, so I replaced the jar with a dishpan with dimensions 38 cm $\times$ 31 cm $\times$ 20 cm. How long will it take the dishpan to fill? (The formula for the volume of a cylinder is $V = \pi r^2 h$, where r = radius of the base and h = height.)

9. You are making a garden and have a budget of \$100. What dimensions can the garden be?

10. A car is traveling on a desert highway at an average speed of 67 mph. Find the time t needed to go a distance d.

11. If there are 11 coins, nickels and dimes, valuing 70 cents, how much of each are there?