



**Exam Math Review
Treatment Systems
Grades III & IV
Practice Problems**

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Grit Removal

1. If the influent wastewater has 28 pound of grit per 10,000 gallons, and the grit removal process unit captures 90% of it. The flow through the plant is 3.1 MGD. how many pounds of grit are removed per day?

Sedimentation

1. If the efficiency of the primary clarifier is 55% and the TSS influent to the clarifier is 280 mg/L. What is the TSS effluent from the clarifier?

2. How gallons of wastewater are there in a 45 foot diameter primary clarifier that operates at 10 foot sidewall depth? Assume the clarifier has a 2 foot deep conical bottom.

3. A polymer has a specific gravity of 1.3, will it float or sink?, what is its weight per gallon?

Biological Treatment

1. An activated sludge plant has two 55 foot diameter aeration tanks, each are 12 feet deep. The MLSS concentration in one tank is 3,500 mg/L, and the other concentration is 4,000 mg/L. Sludge is wasted at a rate of 450 lbs./day and the effluent concentration is 2 mg/L. If the flow through the plant is 1.35 MGD, what is the SRT of the plant?

2. The activated sludge system has two 55 foot diameter aeration tanks and three 40 foot diameter clarifiers. Both the tank and the clarifiers are 10 foot deep. Due to sludge accumulation the aeration tank has 85% of its volume available, and the clarifiers have 78% available. One clarifier is out of service for repairs. If the flow into the system is 4 ft³/s. How long does it take for wastewater to be treated?

