Activity: choose and apply

Chapter 9, Periodic Review and Other Policy Forms

Manuel D. Rossetti

Work in pairs. 20 minutes.

Names: _____

The procedure. Read each table from the top and stop at the first row that fits. The periodic review chapter's table comes first; its last row hands the item to the continuous review chapter's table.

If the item …	Use
is reviewed on a calendar whose interval you may choose	(R, S) at each interval
is reviewed on a calendar fixed by someone else	(R, S)
is watched continuously, with demand in lots, and orders up to a level	(s, S), corrected for undershoot
is watched continuously, with demand in lots	(r, nQ) on compound Poisson demand
is watched continuously, with demand one unit at a time	the continuous review table

If the item …	Use
has a fixed order cost small enough that one unit per order is best	Base-stock level
has a stated backorder cost b per unit per unit time	Exact (r, Q) optimum
has a stockout cost π per unit short, and fast-moving demand	Classical approximation
has a service target and no shortage cost	Type 1 or Type 2 target
already has a policy, and you want its performance	Exact evaluation

For every item answer the same four questions:

(a) Which row does it stop at?
(b) Over what interval is demand taken, and what is its mean? Show the conversion.
(c) Which family, by the variance to mean ratio?
(d) How is a shortage priced: a cost b per unit per year, a cost π per unit short, or a service target?

Part A. Predict

A colleague says: "All three are (r, Q) problems with Poisson demand; only the numbers differ." Before reading the items, which of those two claims do you expect to fail first?

Part B. The ground rod on the vendor's truck

The storeroom's ground rod: crews draw **2,400** a year, one at a time. The vendor delivers only on its weekly truck, so the storeroom may order once a week, and the truck arrives with the order **two weeks** later. A rod costs **$14**, the carrying charge is 25% a year, and the utility charges **$287.50** per rod backordered per year.

Part C. The fuse cutout, reviewed weekly

The fuse cutout is drawn in job lots: **400** lots a year, each of 1, 2 or 4 cutouts with probabilities 0.40, 0.40 and 0.20. The lead time is **two weeks**. The storeroom is free to choose how often it reviews the cutout, and is considering a weekly review. The utility's backorder cost is again **$287.50** per cutout per year.

Part D. The recloser control with a service target

The recloser control: crews draw **30** a year, one at a time, the storeroom watches the position continuously, and the supplier's lead time is **8 weeks**. The supplier ships only in packs of **six**. The utility states no shortage cost; it requires that **95%** of the controls crews ask for are on the shelf when asked.

Exit ticket (tear off and hand in)

Name: _____

1. Why does the periodic review table ask about the calendar before it asks about lots?

2. True or false, and why: an item whose demand arrives in lots always stops at the compound Poisson row.