CYBERQUIZZER CHEAT SHEET

Risk & Recovery Metrics

Two families of acronym: **time** metrics that describe an outage, and **money** metrics that justify the spend. Formulas, units and worked numbers.

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RPO and RTO on one timeline

RPO looks backwards from the incident, RTO looks forwards. That is the whole distinction.

← RPO	RTO →
How much data can we lose?	**How long can we be down?**
Time from the last good backup to the incident. Sets **backup frequency**: a 4-hour RPO means backing up at least every 4 hours.	Time from the incident to service restored. Sets **recovery capability**: hot site, warm standby or restore-from-tape.

WORKED Backups run hourly, the database dies at 14:20, and it is back at 17:20. The last backup was 14:00 — so **20 minutes of data lost** (within a 1-hour RPO) and **3 hours of downtime** (breaching a 2-hour RTO).

Time metrics

Measured in hours or days. MTBF and MTTF are properties of the asset; MTTD and MTTR are properties of your team.

MTTD
Mean Time to Detect

Average time from compromise to noticing it.

Improved by monitoring, SIEM and threat hunting. Also seen as MTTI (Identify).

MTTR
Mean Time to Repair

Average time to fix a failure and restore service.

Your *actual* repair time — RTO is the *target* you set. MTTR > RTO means the plan fails.

MTBF
Mean Time Between Failures

Average uptime between failures of a **repairable** asset.

Higher is better. Drives maintenance schedules and spares holdings.

MTTF
Mean Time to Failure

Expected life of a **non-repairable** asset — you replace it.

The repairable-vs-disposable split is the tell against MTBF.

Money metrics — quantitative risk

Chain them left to right. ALE is the number you compare against the cost of a control.

AV	EF	SLE	ARO	ALE
Asset Value — what the asset is worth.	Exposure Factor — % of the asset lost in one event.	Single Loss Expectancy — cost of **one** event. **AV × EF**	Annual Rate of Occurrence — times per year. Once in 5 yrs = 0.2.	Annual Loss Expectancy — cost **per year**. **SLE × ARO**
`$500,000`	`30% = 0.3`	`$150,000`	`0.5`	`$75,000 / yr`

Where people lose the mark

Three distinctions that decide most metric questions.

RTO vs MTTR
RTO is a **target the business sets**; MTTR is the **average you actually achieve**. One is a promise, the other is evidence.

SLE vs ALE
SLE is **per incident**, ALE is **per year**. If a question mentions "annually" or asks whether a control is worth buying, it wants ALE.

Spend less than the ALE
A control is only justified if its annual cost is **below the ALE reduction** it delivers. $90k of tooling to avoid $75k of annual loss fails the test.

Reading formulas won't stick — turn them into instinct.

Drill SLE, ARO and ALE calculations until the arithmetic is automatic. Ten minutes a day, free forever, no card.

`cyberquizzer.com/go/risk-sheet`