Blurt it

Step 1

Name _____ **Date** _____

1. Cover your notes and put your phone face down.
2. Set a timer for 5 minutes.
3. Write down everything you remember about the rate and extent of chemical change: facts, key words, equations, practicals, and mistakes to avoid. Diagrams count too.

Stuck? Start with one of these: collision theory · catalyst · equilibrium

When the timer ends, turn over and check what you remembered.

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Check it, fix it, space it

Steps 2, 3 and 4

Check it

Tick each idea you wrote down, even in your own words.

- [ ] Mean rate = amount of reactant used or product formed ÷ time taken (g/s or cm^3/s)
- [ ] Draw a tangent to the curve: the steeper it is, the faster the reaction at that moment
- [ ] Raising the concentration, pressure, surface area or temperature speeds up a reaction, and so does a catalyst
- [ ] Collision theory: particles must collide with at least the activation energy to react
- [ ] A higher temperature means more collisions and more energetic collisions
- [ ] A catalyst speeds up a reaction without being used up, by giving a route with a lower activation energy; enzymes are biological catalysts
- [ ] Reversible reactions can go both ways; changing the conditions changes which way is favoured
- [ ] If a reversible reaction is exothermic one way, it is endothermic the other way by the same amount
- [ ] Equilibrium: in a closed system, the forward and reverse reactions happen at the same rate

Higher only

- [ ] Work out the gradient of a tangent to find the rate at one moment, and give rates in mol/s
- [ ] Le Chatelier's Principle: a system at equilibrium shifts to oppose any change in conditions
- [ ] Adding more reactant (or removing product) shifts the equilibrium to make more product
- [ ] Raising the temperature favours the endothermic direction
- [ ] Raising the pressure favours the side with fewer gas molecules

Key words to use: rate of reaction · collision theory · activation energy · catalyst · reversible reaction equilibrium · Le Chatelier's Principle · tangent · gradient

I remembered _____ out of 9. **Higher only: _____ out of 5.**

Fix it

Pick 3 ideas you missed. Look them up, then write each one correctly.

1	2	3

Space it

Blurt again on a fresh sheet. Gaps help you remember for longer.

Tomorrow	In 3 days	In a week
Date _____	Date _____	Date _____
Score _____ / 9	Score _____ / 9	Score _____ / 9
Higher only _____ / 5	Higher only _____ / 5	Higher only _____ / 5

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