

## BM #2 Practice Problems KEY

①  $Q = mc\Delta T$   $175.26 \text{ J} = (10\text{g})C(180^\circ\text{C} - 20^\circ\text{C})$   
 $C = 0.11 \text{ J/g}^\circ\text{C}$

②  $Q = mc\Delta T$   $43 \text{ J} = (25\text{g})C(75^\circ - 10^\circ)$   $C = 0.026 \text{ J/g}^\circ\text{C}$

③  $Q = mc\Delta T$   $230 \text{ J} = (60\text{g})C(160^\circ - 90^\circ)$   $C = 0.055 \text{ J/g}^\circ\text{C}$

④ endo, exo, exo, endo

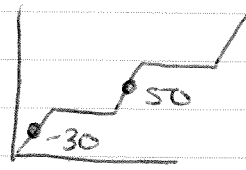
⑤ The ability to do work.

⑥ The amount of heat needed to raise 1 gram of a substance by 1 degree celcius

⑦ The unit used for energy

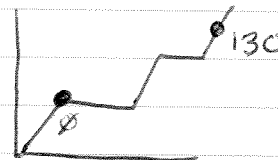
⑧ The amount of energy needed to raise 1 gram of WATER by 1 degree celcius

⑨



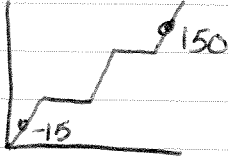
①  $Q = mc\Delta T = (20\text{g})(2.09 \text{ J/g}^\circ\text{C})(0 + 30^\circ) = 1254 \text{ J}$   
 ②  $Q = mL = (20\text{g})(333 \text{ J/g}) = 6660 \text{ J}$   
 ③  $Q = mc\Delta T = (20\text{g})(4.18 \text{ J/g}^\circ\text{C})(50 - 0^\circ) = 4180 \text{ J}$   
**Total = 12094 J**

⑩

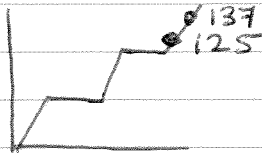


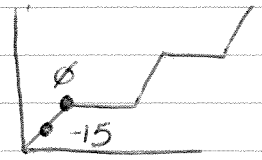
①  $Q = mL = (40\text{g})(333 \text{ J/g}) = 13320 \text{ J}$   
 ②  $Q = mc\Delta T = (40\text{g})(4.18 \text{ J/g}^\circ\text{C})(100 - 0^\circ) = 16720 \text{ J}$   
 ③  $Q = mL = (40\text{g})(2240 \text{ J/g}) = 89600 \text{ J}$   
 ④  $Q = mc\Delta T = (40\text{g})(1.87 \text{ J/g}^\circ\text{C})(130 - 100^\circ) = 2244 \text{ J}$   
**Total = 121884 J**

⑪



①  $Q = mc\Delta T = (3\text{g})(2.09 \text{ J/g}^\circ\text{C})(0 + 15^\circ) = 94.05 \text{ J}$   
 ②  $Q = mL = (3\text{g})(333 \text{ J/g}) = 999 \text{ J}$   
 ③  $Q = mc\Delta T = (3\text{g})(4.18 \text{ J/g}^\circ\text{C})(100 - 0^\circ) = 1254 \text{ J}$   
 ④  $Q = mL = (3\text{g})(2240 \text{ J/g}) = 6720 \text{ J}$   
 ⑤  $Q = mc\Delta T = (3\text{g})(1.87 \text{ J/g}^\circ\text{C})(150 - 100^\circ) = 280.5 \text{ J}$   
**Total = 9347.55 J**

12)   $Q = mc\Delta T = (129)(1.87 \text{ J/g}^\circ\text{C})(125 - 137^\circ)$   
 $Q = -269.28 \text{ J}$

13)   $Q = mc\Delta T = (209)(2.09 \text{ J/g}^\circ\text{C})(-15 - 0)$   
 $Q = -627 \text{ J}$

14) States that as the number of successful collisions between molecules goes up, the reaction rate increases.

15)  $\uparrow [ ] = \uparrow \# \text{ molecules} \therefore \uparrow \text{ collisions} = \uparrow \text{ rate}$   
 $\uparrow T = \uparrow \text{ molecular speed} \therefore \uparrow \text{ collisions} = \uparrow \text{ rate}$

16) no change

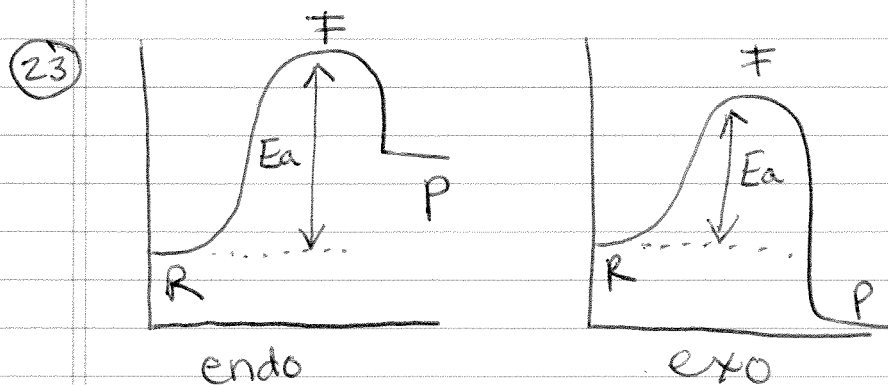
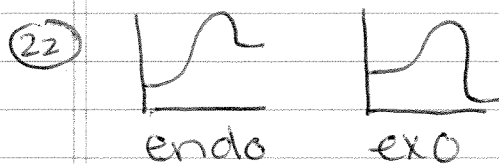
17) no change

18) Left

19) decrease

20) amount of  $\text{PCl}_5$  decreases

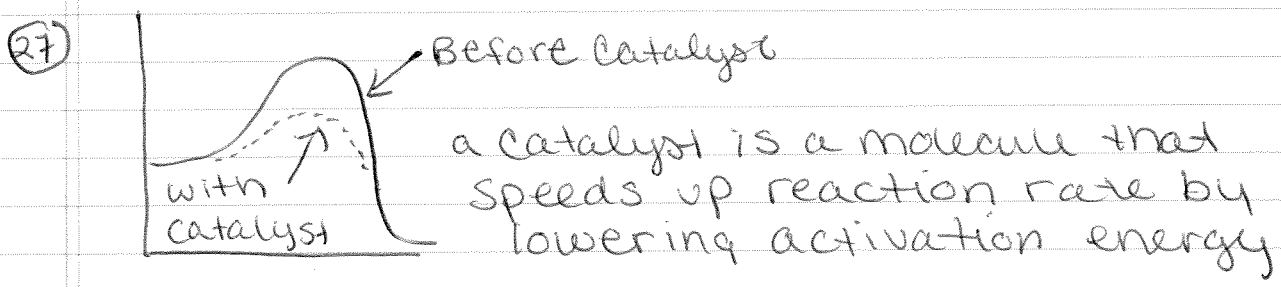
21) rate forward = rate backward



24) endo, exo, exo, endo

25) surface area, catalyst, temperature, concentration

26) concentration, pressure, temperature



28)  $\uparrow [CaCO_3]$ ,  $\downarrow [CO_2]$ ,  $\downarrow T$

29)  $\downarrow [CaCO_3]$ ,  $\uparrow [CO_2]$

SKIP

