**Task**

1. Complete the cracking equations by entering the missing reactant and/or product.
2. Above each substance, write whether it is an alkane or an alkene.
3. For substances with 4 or fewer carbon atoms, write the name of the substance below the formula.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **1.** | $C_{10}H_{22}$ | → | $C_4H_{10}$ | + | $C_2H_4$ | + | | |
| **2.** | $C_{12}H_{26}$ | → | $C_4H_{10}$ | + | $C_5H_{10}$ | + | | |
| **3.** | $C_{14}H_{30}$ | → | $C_9H_{20}$ | + | | + | $C_3H_6$ | |
| **4.** | $C_8H_{18}$ | → | $C_4H_8$ | + | | + | $CH_4$ | |
| **5.** | $C_{20}H_{42}$ | → | $C_{10}H_{20}$ | + | $C_2H_4$ | + | | |
| **6.** | $C_{18}H_{38}$ | → | | + | $C_9H_{18}$ | + | $C_5H_{10}$ | |
| **7.** | $C_{22}H_{46}$ | → | $C_{15}H_{30}$ | + | | + | $C_4H_8$ | |
| **8.** | $C_{15}H_{32}$ | → | | + | $C_9H_{18}$ | + | $C_2H_4$ | |
| **9.** | | → | $C_4H_8$ | + | $C_5H_{10}$ | + | $CH_4$ | |
| **10.** | $C_{22}H_{46}$ | → | $C_5H_{12}$ | + | $C_{14}H_{28}$ | + | | |
| **11.** | $C_{18}H_{38}$ | → | | + | $C_{10}H_{20}$ | + | $C_6H_{14}$ | |
| **12.** | | → | $C_3H_6$ | + | $C_8H_{16}$ | + | $C_2H_6$ | |

## Answers

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|---|---|---|---|---|---|---|---|---|
| 1. | alkane $C_{10}H_{22}$ | → | alkane $C_4H_{10}$ butane | + | alkene $C_2H_4$ ethene | + | alkene $C_4H_8$ butene |
| 2. | alkane $C_{12}H_{26}$ | → | alkane $C_4H_{10}$ butane | + | alkene $C_5H_{10}$ | + | alkene $C_3H_6$ propene |
| 3. | alkane $C_{14}H_{30}$ | → | alkane $C_9H_{20}$ | + | alkene $C_2H_4$ ethene | + | alkene $C_3H_6$ propene |
| 4. | alkane $C_8H_{18}$ | → | alkene $C_4H_8$ butene | + | alkene $C_3H_6$ propene | + | alkane $CH_4$ methane |
| 5. | alkane $C_{20}H_{42}$ | → | alkene $C_{10}H_{20}$ | + | alkene $C_2H_4$ ethene | + | alkane $C_8H_{18}$ |
| 6. | alkane $C_{18}H_{38}$ | → | alkane $C_4H_{10}$ butane | + | alkene $C_9H_{18}$ | + | alkene $C_5H_{10}$ |
| 7. | alkane $C_{22}H_{46}$ | → | alkene $C_{15}H_{30}$ | + | alkane $C_3H_8$ propane | + | alkene $C_4H_8$ butene |
| 8. | alkane $C_{15}H_{32}$ | → | alkane $C_4H_{10}$ butane | + | alkene $C_9H_{18}$ | + | alkene $C_2H_4$ ethane |
| 9. | alkane $C_{10}H_{22}$ | → | alkene $C_4H_8$ butene | + | alkene $C_5H_{10}$ | + | alkane $CH_4$ methane |
| 10. | alkane $C_{22}H_{46}$ | → | alkane $C_5H_{12}$ | + | alkene $C_{14}H_{28}$ | + | alkene $C_3H_6$ propene |
| 11. | alkane $C_{18}H_{38}$ | → | alkene $C_2H_4$ ethene | + | alkene $C_{10}H_{20}$ | + | alkane $C_6H_{14}$ |
| 12. | alkane $C_{13}H_{28}$ | → | alkene $C_3H_6$ propene | + | alkene $C_8H_{16}$ | + | alkane $C_2H_6$ ethane |