Group 1. If x is an even integer and y is an integer, then $x \cdot y$ is an even integer. ER1.2.3
Group 2. If x is an odd integer and y is an odd integer, then $x + y$ is an even integer. ER1.2.2
Group 3. If x is an even integer and y is an odd integer, then $x + y$ is an odd integer. ER1.2.2
Group 4. If x is an even integer and y is an even integer, then $x + y$ is an even integer. ER1.2.2
Group 5. If m is an even (resp. odd) integer, then $m + 1$ is an odd (resp. even) integer. ER1.2.1

Proof. Put your proof here. ■