Estimate the square and square root of a number

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| 1. Estimate the value of<br>a) $32^2$<br><br>32 is between 30 and 40<br>$32^2$ is between $30^2$ and $40^2$<br>That is, $32^2$ is between 900 and 1600<br>Thus, $32^2 \approx 900$ | b) $11.9^2$<br><br>$11.9^2$ is between 10 and 20<br>$11.9^2$is between $10^2$ and $20^2$<br>That is, $11.9^2$ is between 100 and 400<br>Thus, $11.9^2 \approx 100$ |
| c) $8.7^2$<br><br>$8.7^2$ is between 8and 9<br>$8.7^2$is between $8^2$ and $9^2$<br>That is, $8.7^2$ is between 64 and 81<br>Thus, $8.7^2 \approx 81$ | d) $(-6.2)^2$<br><br>$(-6.2)^2$ is between -6 and -7<br>$(-6.2)^2$is between $(-6)^2$ and $(-7)^2$<br>That is, $(-6.2)^2$ is between 36 and 49<br>Thus, $(-6.2)^2 \approx 36$ |
| 2. Estimate the value of<br>a) $\sqrt{52}$<br><br>52 is between perfect squares 49 and 64<br>$\sqrt{52}$ is between $\sqrt{49}$ and $\sqrt{64}$<br>That is, $\sqrt{52}$ is between 7 and 8<br>Thus, $\sqrt{52} \approx 7$ | b) $\sqrt{21.7}$<br><br>$\sqrt{21.7}$ is between perfect squares 16 and 25<br>$\sqrt{21.07}$ is between $\sqrt{16}$ and $\sqrt{25}$<br>That is, $\sqrt{21.7}$ is between 4 and 5<br>Thus, $\sqrt{21.7} \approx 5$ |
| c) $\sqrt{70}$<br><br>$\sqrt{70}$ is between $\sqrt{64}$ and $\sqrt{81}$<br>That is, $\sqrt{70}$ is between 8 and 9<br>Thus, $\sqrt{70} \approx 8$ | d) $\sqrt{111}$<br><br>$\sqrt{111}$ is between $\sqrt{100}$ and $\sqrt{121}$<br>That is, $\sqrt{111}$ is between 10 and 11<br>Thus, $\sqrt{111} \approx 10$ |

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