

Some of the answers may vary.

ESTIMATION

ANSWERS

THIS HANDOUT IS DESIGNED TO BE USED WITH THE ESTIMATION VIDEO.

Estimation (\approx) is a rough calculation of a number or value. It is not exact but close enough to use in everyday life. It can save you time and make mathematics easier.

Helpful Examples

ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE
42	→ 40	789	→ 800	254	→ 250

Now your turn. Milky has 23 marbles and just received six new bags of marbles in the mail. Help her make a quick estimate of how many marbles are in each bag.

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|---------------------------|-----------------------------|---------------------------|
| 1. 24 \approx <u>20</u> | 2. 132 \approx <u>130</u> | 3. 15 \approx <u>20</u> |
| 4. 67 \approx <u>70</u> | 5. 204 \approx <u>200</u> | 6. 48 \approx <u>50</u> |

There are 2,000,000 books at Penelope Library. Kurt found 6 boxes of books in the basement. Help him make a quick estimate of how many books are in each box.

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|------------------------------|---------------------------------|-----------------------------|
| 7. 178 \approx <u>200</u> | 8. 1,623 \approx <u>1,600</u> | 9. 721 \approx <u>700</u> |
| 10. 650 \approx <u>700</u> | 11. 948 \approx <u>900</u> | 12. 25 \approx <u>30</u> |

Critical Thinking

13. Does it matter how many marbles or books they have when estimating? Yes or No and Explain your answer.

Yes, the total value helps determine what place value to estimate to. If it is small like 23 marbles than you will have to be more specific, but if it is high like 2,000,000 books you can be more flexible or less specific in your estimate.

14. Why might some of your answers be different from someone else's? Explain and give an example.

Estimation has some flexibility so different people might estimate differently. For example, 178 could be estimated to 180 or 200. It matters how exact you want to be and how large or small the total values are.

Round each number to the nearest hundreds place. **Examples: 467 \approx 500 or 4,821 \approx 4,800**

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|----------------------------------|--------------------------------|----------------------------------|
| 15. 2,321 \approx <u>2,300</u> | 16. 950 \approx <u>1,000</u> | 17. 8,683 \approx <u>8,700</u> |
|----------------------------------|--------------------------------|----------------------------------|

Round each number to the nearest tens place. **Examples: 28 \approx 30 or 467 \approx 470**

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|----------------------------|------------------------------|----------------------------------|
| 18. 87 \approx <u>90</u> | 19. 453 \approx <u>450</u> | 20. 5,121 \approx <u>5,120</u> |
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Round each number to the nearest whole number. **Examples: 9.67 \approx 10 or 48.21 \approx 48**

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| 21. 8.39 \approx <u>8</u> | 22. 41.76 \approx <u>42</u> | 23. 189.6 \approx <u>190</u> |
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ESTIMATION CONTINUED

ANSWERS

Add using estimation. Show your estimates.

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|---|---|---|--|
| 24. $\begin{array}{r} 46 \rightarrow 50 \\ + 92 \rightarrow 90 \\ \hline 140 \end{array}$ | 25. $\begin{array}{r} 723 \rightarrow 700 \\ + 684 \rightarrow 700 \\ \hline 1,400 \end{array}$ | 26. $\begin{array}{r} 5,308 \rightarrow 5,000 \\ + 2,762 \rightarrow 3,000 \\ \hline 8,000 \end{array}$ | 27. $\begin{array}{r} 75 \rightarrow 100 \\ + 349 \rightarrow 300 \\ \hline 400 \end{array}$ |
|---|---|---|--|

Subtract using estimation. Show your estimates.

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|--|---|--|---|
| 28. $\begin{array}{r} 82 \rightarrow 80 \\ - 27 \rightarrow 30 \\ \hline 50 \end{array}$ | 29. $\begin{array}{r} 650 \rightarrow 700 \\ - 409 \rightarrow 400 \\ \hline 300 \end{array}$ | 30. $\begin{array}{r} 9,850 \rightarrow 10,000 \\ - 3,299 \rightarrow 3,000 \\ \hline 7,000 \end{array}$ | 31. $\begin{array}{r} 1,378 \rightarrow 1,400 \\ - 467 \rightarrow 500 \\ \hline 900 \end{array}$ |
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Multiply using estimation. Show your estimates.

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| 32. $\begin{array}{r} 64 \rightarrow 60 \\ \times 8 \rightarrow 8 \\ \hline 480 \end{array}$ | 33. $\begin{array}{r} 819 \rightarrow 800 \\ \times 25 \rightarrow 30 \\ \hline 24,000 \end{array}$ | 34. $\begin{array}{r} 3,275 \rightarrow 3,000 \\ \times 97 \rightarrow 100 \\ \hline 300,000 \end{array}$ | 35. $\begin{array}{r} 750 \rightarrow 800 \\ \times 431 \rightarrow 400 \\ \hline 320,000 \end{array}$ |
|--|---|---|--|

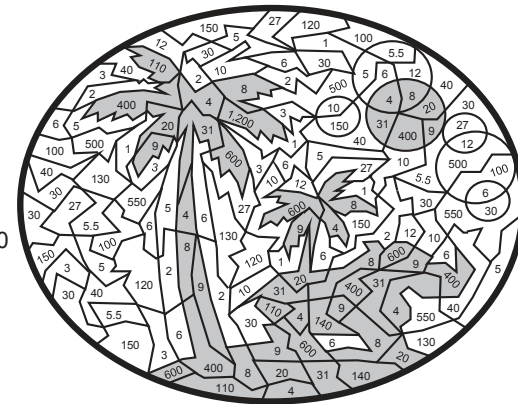
Divide using estimation. Show your estimates.

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|---|--|---|--|
| 36. $\begin{array}{r} \boxed{10} \quad \boxed{800} \\ 9 \overline{) 823} \\ \underline{80} \\ 23 \end{array}$ | 37. $\begin{array}{r} \boxed{50} \quad \boxed{300} \\ 45 \overline{) 319} \\ \underline{30} \\ 19 \end{array}$ | 38. $\begin{array}{r} \boxed{3} \quad \boxed{600} \\ 3 \overline{) 578} \\ \underline{30} \\ 278 \end{array}$ | 39. $\begin{array}{r} \boxed{20} \quad \boxed{1000} \\ 23 \overline{) 981} \\ \underline{46} \\ 521 \end{array}$ |
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Answer, Find, and Shade

Circle the best estimation for each problem.

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|---|---------------------------------------|
| 40. 148 - 41
150 100 (110) | 41. 73 + 65
120 (140) 130 |
| 42. $9 \overline{) 218}$
27 (20) 30 | 43. 18 x 33
(600) 500 550 |
| 44. $32 \overline{) 256}$
6 (8) 12 | 45. 16.32 + 14.50
(31) 30 1 |
| 46. 2.76 x 3.42
10 6 (9) | 47. 7.28 - 2.88
5 5.5 (4) |



48. In a random sample, 20 out of 50 students said they prefer chocolate ice cream. How many servings should the school cafeteria prepare for 1,000 students? **400 servings**
49. In a random sample, 24 out of 60 households had a dog in the town of Nowaday. If the town has 3,000 households, approximately how many of the households have a dog? **1,200 households**