NAME_____

Module 1 **Number Sense**
Lesson 5 **Estimation**

Independent Practice 1.5

Decide if an exact number or an estimate is needed.

1. How many ounces are in three pounds? **Exact Answer**

2. About how much does the suitcase weigh? **Estimate**

3. About how many nails are in the box? **Estimate**

4. Approximately how many people visited the museum last year? **Estimate**

Use Front-End Estimation to estimate each sum or difference. Then use Front-End Estimation with rounding to estimate each sum or difference.

5. 619 + 437
≈ 1,000 w/o rounding
≈ 1,000 w rounding

6. 1,144 – 376
≈ 800 w/o rounding
≈ 700 w rounding

7. 304 – 165
≈ 200 w/o rounding
≈ 100 w rounding

8. 1,081 + 2,392
≈ 3,000 w/o rounding
≈ 3,000 w rounding

9. 2,301 + 4,679
≈ 6,000 w/o rounding
≈ 7,000 w rounding

10. 9,516 – 8,112
≈ 1,000 w/o rounding
≈ 2,000 w rounding

Round each number to the given place value.

11. Round to the nearest 10.
101 452
100 **450**

12. Round to the nearest 100.
623 1,286
600 **1,300**

13. Round to the nearest 1,000.
4,399 12,602
4,000 **13,000**

14. Round to the nearest 10,000.
14,866 15,121
10,000 **20,000**

Estimate to solve each problem.

15. Kevin practiced guitar for 57 minutes on Monday, 84 minutes on Wednesday, and 31 minutes on Thursday. About how long did he practice altogether?
Possible answer: 57 → 60, 84 → 80, 31 → 30, 60 + 80 + 30 = 170, ≈ 170 minutes

16. Sophie earned $104 baby sitting. If she earns $8 per hour, about how many hours did she baby sit?
Possible answer: 104→ 100, 8 → 10, 100 ÷ 10 = 10, ≈ 10 hours

17. The Perez family drove 1,871 miles on their vacation. They bought a total of 96 gallons of gas. About how many miles did they travel on each gallon of gas?
Possible answer: 1,871 → 2,000, 96 → 100, 2,000 ÷ 100 = 20, ≈ 20 miles

18. Mr. Kim has 18 employees. Each employee works 48 hours per week. About how many hours in total do the employees work in a year?
Possible answer: 18 → 20, 48 → 50, 52 → 50, 20 × 50 × 50 = 50,000, ≈ 50,000 hours

Journal

1. When is it appropriate to use estimation?
2. When estimating the sum of two three-digit numbers, which is more likely to give a result that is closer to the actual sum: front-end estimation or rounding to the nearest hundred? Justify your answer with an example.
3. Explain the difference between using rounding and compatible numbers in division problems. Provide an example.

Cumulative Review

Using mental math, evaluate each of the following.

1. $(36 + 50 + 64) \div (30 \div 6)^2$
6

2. $[(52 + 8) + (14 \times 5 \times 2)] \div 50$
4

3. $[15 + (7 \times 5)] - 2(75 \div 15)^2$
0

4. $[(9 \times 2) - 8] \times [5^2 - (60 \div 4)] - 4^2$
84

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Module 1 **Number Sense**
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Use the Distributive Property to model the following. Possible answers shown.

5. 9(27)
9(20 + 7) = 180 + 63 = 243

6. (24)(22)
(20 + 4)(20 + 2) = 400 + 40 + 80 + 8 = 528

7. 7(59)
7(60 – 1) = 420 – 7 = 413

8. 18·33
(10 + 8)(30 + 3) = 300 + 30 + 240 + 24 = 594

Use the Distributive Property to solve the following.

9. Anna did 9 sets of 36 sit-ups. How many sit-ups did she do in all?
324 sit-ups

10. At a barbecue, Mr. Lewis cooked 19 packages of 12 hotdogs. How many hotdogs did he cook in all?
228 hotdogs

Possible Journal Answers

1. **Estimation is appropriate when an approximate answer is needed, rather than an exact answer. Estimating can also be used to check the reasonableness of answers arrived at through calculation.**

2. **Rounding to the nearest hundred is more likely to give an answer that is closer to the actual sum. Front-end estimation uses only the first digit of the three-digit number, ignoring the ten's and one's values. On the other hand, rounding considers the value of the ten's digit in determining whether to round up or not. For example, using front-end estimation 275 + 296 ≈ 200 + 200 = 400. Estimating by rounding results in 275 + 296 ≈ 300 + 300 = 600, which is much closer to the actual sum of 571.**

3. **To use rounding in a division problem, round the divisor and dividend to a convenient place value. To use compatible numbers, choose numbers that are easy to use mentally and close to the divisor and dividend, but not necessarily rounded to the same place. For example, to estimate 257 ÷ 22 using rounding, one might round to the nearest ten and divide, 257 ÷ 22 ≈ 260 ÷ 20 = 13. Using compatible numbers, the estimate might be 257 ÷ 22 ≈ 250 ÷ 25 = 10.**