

Homework & Practice 2-1

Mental Math: Find Sums and Differences

Another Look!

Adv Monday 9/9/19



There are different strategies for adding and subtracting with mental math.

Addition Strategies

Find $3,728 + 2,420$.

One Way

Break up the addends by place value.

$$\begin{array}{r} 3,000 + 2,000 = 5,000 \\ 700 + 400 = 1,100 \\ 20 + 20 = 40 \\ 8 + 0 = 8 \\ \hline 6,148 \end{array}$$

Another Way

Use compensation to find $3,428 + 2,420$.

2,400 is easier to add than 2,420.

$$3,728 + 2,400 = 6,128.$$

Add 20 to the answer because 20 was subtracted earlier.

$$6,128 + 20 = 6,148$$

Subtraction Strategies

Find $40,000 - 7,985$.

One Way

Use compensation.

8,000 is easier to subtract than 7,985.

$$40,000 - 8,000 = 32,000$$

Since you subtracted 15 too many, add 15 to your answer.

$$32,000 + 15 = 32,015$$

Another Way

Use counting on to find $40,000 - 7,985$.

$$7,985 + 15 = 8,000$$

$$8,000 + 2,000 = 10,000$$

$$10,000 + 30,000 = 40,000$$

Add the parts.

$$30,000 + 2,000 + 15 = 32,015$$

For 1-10, use mental math to solve.

1. $4,576 + 2,842 = 7,418$

3. $218,389 + 40,510 = 258,899$

5. $46,524 + (37,824 + 2,176) = 86,524$

7. ~~$(86,765 + 36,235) + 24,215$~~ skip

9. ~~$8,452 + (917 + 0)$~~ skip

2. $56,211 - 6,189 = 50,022$

4. $72,000 - 41,426 = 30,574$

6. ~~$658,843 - 7,635$~~ skip

8. ~~$9,378 - 2,536$~~ skip

10. ~~$12,211 + 11,298$~~ skip

You can choose the mental math strategy you think will work best.

*check

$$\begin{array}{r} 50,022 \\ + 6,189 \\ \hline 56,211 \end{array}$$

*check

$$\begin{array}{r} 30,574 \\ + 41,426 \\ \hline 72,000 \end{array}$$



11. **Math and Science** Write and solve a number sentence to find the difference between the speeds of the planets Venus and Saturn. Then write the difference using number names.
(word form)

$$78,341 - 21,637 = 56,704$$

Fifty-six thousand, seven hundred four

*check

$$\begin{array}{r} 56,704 \\ + 21,637 \\ \hline 78,341 \end{array}$$

Speeds of Planets	
Planet	Speed (Miles per hour)
Neptune	12,253
Saturn	21,637
Mars	53,979
Venus	78,341

12. © **MP.6 Be Precise** Use a mental math strategy to find $4,290 + 3,602$. Explain how to check your answer using a different strategy.

skip

13. Janelle needs to score 280,000 points on her computer game to get to the next level. So far, she has scored 96,675 points. How many more points does Janelle need to score to reach the next level? Use mental math strategies to find the answer.

$$280,000 - 96,675 = 183,325$$

*check

$$\begin{array}{r} 183,325 \\ + 96,675 \\ \hline 280,000 \end{array}$$

14. **AZ Vocabulary** June is working on an addition problem and starts with 17,985. After she adds, she still has 17,985. Which property of addition did June use? How do you know?

June used the Identity Property of Addition, which states that any number plus zero is the same number.
(sample answer)

15. **Higher Order Thinking** Explain how you can use mental math to perform the following addition:

$$61,438 + 54,579 + 28,562$$

skip

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16. Guy wants to add 7,145 and 8,265 and using mental math strategies. What steps could Guy take to add the numbers? Is Guy's answer correct? Explain.

Guy's Work
$7,145 + 8,265 = 15,410$

(sample answer)

- ① Add $5+5 = 10$ (ones)
 - ② Add $26+14 = 40$ (tens)
 - ③ Add $7+8 = 15$ (thousands)
 - ④ $10 \text{ ones} = 10$
 $40 \text{ tens} = 400$
 $15 \text{ thousands} = 15,000$
- 15,410

Homework & Practice 2-2

Mental Math: Estimate Sums and Differences

Another Look!



You can use rounding to estimate sums and differences.

To estimate $64,236 + 15,542$:

Round to the nearest hundred

$$64,200 + 15,500 = 79,700$$

Round to the nearest thousand

$$64,000 + 16,000 = 80,000$$

Round to the nearest ten thousand

$$60,000 + 20,000 = 80,000$$

To estimate $452,776 - 186,257$:

Round to the nearest thousand

$$453,000 - 186,000 = 267,000$$

Round to the nearest ten thousand

$$450,000 - 190,000 = 260,000$$

Round to the nearest hundred thousand

$$500,000 - 200,000 = 300,000$$

For 1-10, estimate each sum or difference.

1.
$$\begin{array}{r} 753,265 \rightarrow 750,000 \\ - 419,057 \rightarrow -420,000 \\ \hline 330,000 \end{array}$$

2.
$$\begin{array}{r} 48,765 \rightarrow 49,000 \\ + 9,221 \rightarrow + 9,000 \\ \hline 58,000 \end{array}$$

3.
$$\begin{array}{r} 7,792 \rightarrow 8,000 \\ - 3,847 \rightarrow -4,000 \\ \hline 4,000 \end{array}$$

4. ~~$$\begin{array}{r} 2,189 \\ - 1,388 \\ \hline \end{array}$$~~ Skip

5. ~~$$\begin{array}{r} 9,245 \\ - 4,033 \\ \hline \end{array}$$~~ Skip

6. ~~$$\begin{array}{r} 1,000,000 \\ - 447,618 \\ \hline \end{array}$$~~ Skip

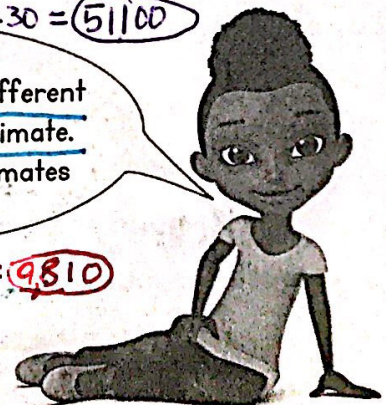
7.
$$\begin{array}{r} 65,327 - 14,231 \quad \boxed{\text{OR}} \quad 70,000 - 10,000 = 60,000 \quad \boxed{\text{OR}} \quad 65,300 - 14,200 = 51,100 \\ \downarrow \quad \downarrow \quad \boxed{\text{OR}} \quad 65,330 - 14,230 = 51,100 \\ 65,000 - 14,000 = 51,000 \end{array}$$

8. ~~$$391,192 + 511,864$$~~ Skip

9.
$$\begin{array}{r} 8,475 + 1,329 \quad \boxed{\text{OR}} \quad 8,000 + 1,000 = 9,000 \quad \boxed{\text{OR}} \quad 8,480 + 1,330 = 9,810 \\ \downarrow \\ 8,500 + 1,300 = 9,800 \end{array}$$

10. ~~$$812,910 - 709,085$$~~ Skip

Your estimate may be different from someone else's estimate. That's okay if both estimates are reasonable.



For 11–12, use the table at the right.

11. © MP.1 Make Sense and Persevere About how much greater is the area of the largest ocean than the area of the smallest ocean?

(sample) $165,760 \rightarrow 166,000$
 $- 14,090 \rightarrow - 14,000$
152,000
 about 152,000 km²

12. Write the area of the Pacific Ocean in expanded form.

$100,000 + 60,000 + 5,000 + 700 + 60$



Ocean Area	
Ocean	Area (sq km)
Arctic Ocean	(Smallest) 14,090
Atlantic Ocean	82,400
Indian Ocean	65,527
Pacific Ocean	(largest) 165,760

13. Algebra In a local election, 138,201 people voted for the winning candidate. If she won by 29,288 votes, about how many votes did the other candidate receive?

skip

14. In one weekend, a theatre sells 74,877 tickets to a new movie. Write the values for each of the 7s in 74,877.



15. Number Sense Is $9,760 - 5,220$ more or less than 4,000? Explain how you can tell without finding the exact difference.

(sample) $9,760 - 5,220$ is more than 4,000 because $9,000 - 5,000$ is 4,000, but $700 - 200$ is 500 and $60 - 20$ is 40, so the difference is 540 more than 4,000.

16. Higher Order Thinking The fourth graders sang on a two-day telethon for the local children's hospital. The hospital hoped to raise \$750,000. On day one, they raised \$398,622. On day two, they raised \$379,873. Did they reach their goal? About how much more or less did they raise?

skip

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17. Anya says, "62,996 rounds to 63,000." Select all the places to which she could have rounded the number.

- ones X
- tens 62,996 ✓
- hundreds 62,996 ✓
- thousands 62,996 ✓
- ten thousands 62,996 X

18. Select all of the choices that are reasonable estimates for the difference of $874,169 - 387,245$ by rounding to place values.

- 486,920
- 487,000
- 480,000
- 500,000
- 600,000

skip