

Alpha

Lesson 9 Addition: + 9, Mental Maths

- (1) Alpha Instruction Manual, Lesson 9
- (2) Alpha Student Text, Lesson 9
- (3) Alpha Test Booklet, Test 9
- (4) Alpha Instruction Manual, Lesson 9 Solutions

Alpha focuses on teaching the concepts of single digit addition and subtraction. We use systematic teaching strategies to help students commit the addition and subtraction facts to memory.

These Alpha Sample Pages will give you an idea of Math-U-See's unique method of instruction. However, the cornerstone of Math-U-See's success in teaching Single-Digit Addition & Subtraction and other topics is our multi-sensory approach to maths instruction. Integrated Manipulative Blocks and Lesson-by-Lesson videos are used in every lesson throughout the Alpha Level to incorporate kinaesthetic, visual and auditory learning.

If you believe that Alpha is the level for your student to begin, please confirm this by completing our free online placement tests.

To Your Success!!



ALPHA – LESSON 9

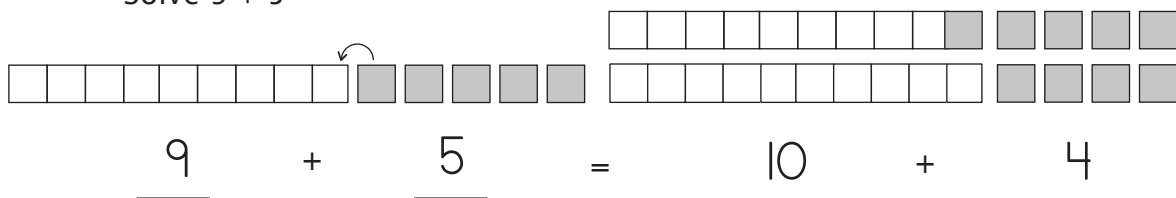
Addition: +9, Mental Maths

In this lesson we are adding by nines. The idea of making or wanting to be ten will be your foundation for regrouping. First practise counting backwards by one using the game near the end of this lesson. Taking one away, or counting down by one, is essential to our approach to learning to add by nine.

I like to introduce this with a short narrative about how nine isn't content because he wants to be ten. Ask most nine-year-olds how old they want to be, and they say, "Ten!" Children understand Mr. Nine. Next ask, "What does nine need to have added to him to be ten?" "One unit!" Nine is therefore always on the prowl, looking for one more so he can be ten! Using a nine bar and several green unit bars, let's create the equation $9 + 5$. Ham it up any way you can, perhaps having the student look away or close his eyes. In that instant nine takes one to be ten (or "onety").

Example 1

Solve $9 + 5 =$



Nine plus five is equal to ten plus four, or fourteen.

Note: This will be the first time a student has added ten to a number. Simply apply what the student knows about place value. Start with ten and ask what you would have if you added two more: for example: $10 + 2 = 12$. Put together a ten bar and a two bar to illustrate this.

In example 1, we still have one nine and five units, and they are the same length as one ten and four units. Nine is finally happy, and $10 + 4$ is 14 ("onety-four"). We can also see that $9 + 5 = 14$. The original five has been decreased by one from five

to four. And nine has been increased by one to be ten. This is what regrouping or carrying is all about!

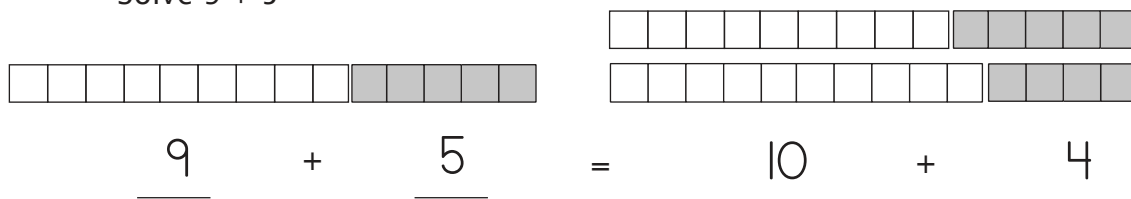
To remember the written code, let's make the circle on the top of the numeral 9 the end of a vacuum nozzle. Nine is always "sucking up" one. Making the noise is fun and multi-sensory. When a child sees 9, he thinks "one less" and sucks up one or makes whatever noise you make. Practise the nines now until the student understands and feels confident adding by nine. Be sure to practise "taking one away" first with the game on the next page.

There are addition facts songs on the CD *Skip Counting and Addition Facts Songs*. These are designed to assist the student in memorising his facts.

Another way to solve adding by nine is to use the coloured unit bars. For $9 + 5$ pick out the lime green bar and the light blue five bar. Place them end to end and say, "Nine plus five is the same as ten plus what?" Have the student find the yellow four bar and place it at the end of the blue ten bar. Then say, "Nine plus five is the same as ten plus four, or fourteen." See example 2. Choose whichever way helps the student understand the concept most effectively. Don't forget to use the same strategies as in previous lessons of presenting the problems by building, writing, and saying to assist in memorising and understanding these facts.

Example 2

Solve $9 + 5 =$



Nine plus five is equal to ten plus four, or fourteen.

With this lesson, we have learned 64 out of 100 facts. That is over half!

0+0	0+1	0+2	0+3	0+4	0+5	0+6	0+7	0+8	0+9
1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9
2+0	2+1	2+2	2+3	2+4	2+5	2+6	2+7	2+8	2+9
3+0	3+1	3+2	3+3	3+4	3+5	3+6	3+7	3+8	3+9
4+0	4+1	4+2	4+3	4+4	4+5	4+6	4+7	4+8	4+9
5+0	5+1	5+2	5+3	5+4	5+5	5+6	5+7	5+8	5+9
6+0	6+1	6+2	6+3	6+4	6+5	6+6	6+7	6+8	6+9
7+0	7+1	7+2	7+3	7+4	7+5	7+6	7+7	7+8	7+9
8+0	8+1	8+2	8+3	8+4	8+5	8+6	8+7	8+8	8+9
9+0	9+1	9+2	9+3	9+4	9+5	9+6	9+7	9+8	9+9

Game to Precede Adding by 9

Smaller – Get out the one through nine blocks and stack them in ascending order so the green unit is on the right. Ask the question, “Which number is a one smaller than ()?” or “Which number is a one less than ()?” Do this until the student knows each one; only then move to learning the nine facts.

Mental Maths

Mental maths problems can be used to keep the facts alive in the memory and to develop mental maths skills. The teacher should say the problem slowly enough so that the student comprehends it, and then walk him through increasingly difficult exercises. The purpose is to stretch but not discourage. You decide where that line is! See the example below, along with some suggested problems to try.

Example 3

$2 + 3 + 1 = ?$ “Two plus three plus one equals what number?”




The student thinks, “ $2 + 3 = 5$, and $5 + 1 = 6$.” At first you will need to go slowly enough for him or her to verbalise the intermediate step. As skills increase, the student should be able to just give the answer.


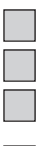
Starting with this lesson, every third lesson in this instruction manual will have some suggested mental maths problems for you to read aloud to your student. Try a few at a time, and remember to go quite slowly at first.




1. Four plus one plus one equals what number? (6)
2. Two plus two plus zero equals what number? (4)
3. Five plus one plus two equals what number? (8)
4. Three plus two plus two equals what number? (7)
5. Eight plus one plus five equals what number? (14)
6. One plus three plus zero equals what number? (4)
7. Six plus two plus one equals what number? (9)
8. Five plus two plus two equals what number? (9)
9. Seven plus two plus eight equals what number? (17)
10. Nine plus zero plus one equals what number? (10)

LESSON PRACTICE 9A




Build, match, write, and say. The first one is done for you.
You will need to turn your book sideways to complete this.




1.  +  = 




2.  +  = 




3.  +  = 

4.  +  = 

1.  +  = 

2.  +  = 

3.  +  = 

4.  +  = 

LESSON PRACTICE 9A

Build, write, and say.

$$\begin{array}{r} 5. \quad \quad 9 \\ + \quad 9 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad \quad 9 \\ + \quad 5 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad \quad 9 \\ + \quad 2 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad \quad 9 \\ + \quad 3 \\ \hline \end{array}$$

9. $9 + 6 = \underline{\quad}$

10. $1 + 9 = \underline{\quad}$

11. $9 + 4 = \underline{\quad}$

12. $9 + 8 = \underline{\quad}$

13. Nine boys were playing soccer. Seven more joined them.
How many boys are playing soccer now?

$$\underline{9} + \underline{7} = \underline{\quad}$$

14. Tim read 9 books the first week of his holiday. The second week he read 9 more. How many books did he read altogether?

$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

LESSON PRACTICE 9B

Build, match, write, and say.

You will need to turn your book sideways to complete this.

1.

2.

3.

4.

LESSON PRACTICE 9B

Build, write, and say.

$$\begin{array}{r} 5. \quad \quad 9 \\ + \quad 8 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad \quad 9 \\ + \quad 4 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad \quad 9 \\ + \quad 7 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad \quad 9 \\ + \quad 1 \\ \hline \end{array}$$

9. $5 + 9 = \underline{\quad}$

10. $0 + 9 = \underline{\quad}$

11. $9 + 3 = \underline{\quad}$

12. $9 + 9 = \underline{\quad}$

13. Peter had nine little block sets. He got six more sets for Christmas. How many sets does he have now?

$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

14. David had 3 CDs. If he bought 9 more, how many CDs would he have altogether?

$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

LESSON PRACTICE 9C

Build, match, write, and say.

You will need to turn your book sideways to complete this.

1.

2.

3.

4.

LESSON PRACTICE 9C

Build, write, and say.

$$\begin{array}{r} 5. \quad \quad 7 \\ + \quad 9 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad \quad 9 \\ + \quad 8 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad \quad 9 \\ + \quad 2 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad \quad 9 \\ + \quad 4 \\ \hline \end{array}$$

9. $6 + 9 = \underline{\quad}$

10. $9 + 3 = \underline{\quad}$

11. $9 + 9 = \underline{\quad}$

12. $9 + 0 = \underline{\quad}$

13. Julia ate 9 grapes, and then she ate 5 more. How many grapes did she eat altogether?

$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

14. Christie's dog had nine puppies. How many dogs altogether does Christie have now?

$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

SYSTEMATIC REVIEW 9D

Solve.

$$\begin{array}{r} 1. \quad 9 \\ + \quad 9 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 5 \\ + \quad 2 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 40 \\ + \quad 10 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 9 \\ + \quad 7 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 200 \\ + \quad 200 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 5 \\ + \quad 9 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 1 \\ + \quad 6 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 9 \\ + \quad 6 \\ \hline \end{array}$$

9. $9 + 0 = \underline{\quad}$

10. $8 + 9 = \underline{\quad}$

11. $7 + 2 = \underline{\quad}$

12. $9 + 1 = \underline{\quad}$

SYSTEMATIC REVIEW 9D

Solve for the unknown. Use the blocks if needed.

13. $\underline{\quad} + 4 = 13$

14. $\underline{\quad} + 2 = 6$

Build and say the number.

15. 461

Skip count by 10 and write the numbers.

16. 10, $\underline{\quad}$, $\underline{\quad}$, $\underline{\quad}$, $\underline{\quad}$, $\underline{\quad}$, $\underline{\quad}$, 80, $\underline{\quad}$, $\underline{\quad}$

17. James is 8 years old. How old will he be in 9 more years?

18. Seven guests have been served either milk or juice. Six are drinking juice. How many are drinking milk?

$\underline{\quad} + \underline{6} = \underline{7}$

SYSTEMATIC REVIEW 9E

Solve.

$$\begin{array}{r} 1. \quad 9 \\ + \quad 3 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 4 \\ + \quad 9 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 60 \\ + \quad 20 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 0 \\ + \quad 4 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 2 \\ + \quad 9 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 9 \\ + \quad 9 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 8 \\ + \quad 2 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 300 \\ + \quad 100 \\ \hline \end{array}$$

9. $5 + 9 = \underline{\quad}$

10. $2 + 4 = \underline{\quad}$

11. $9 + 5 = \underline{\quad}$

12. $1 + 7 = \underline{\quad}$

SYSTEMATIC REVIEW 9E

Solve for the unknown. Use the blocks if needed.

13. $\underline{\quad} + 8 = 17$

14. $\underline{\quad} + 5 = 7$

Build and say the number.

15. 249

Skip count by 10 and write the numbers.

16. $\underline{\quad}, 20, \underline{\quad}, \underline{\quad}, \underline{\quad}, \underline{\quad}, \underline{\quad}, \underline{\quad}, 90, \underline{\quad}$

17. I saved 9 dollars for a gift that cost 12 dollars. How many more dollars do I need to save?

18. Dave called his friend 4 times on Monday and 2 times on Tuesday. How many calls did he make those two days?

On Wednesday, Dave made 9 more calls. How many calls did he make altogether?

SYSTEMATIC REVIEW 9F

Solve.

$$\begin{array}{r} 1. \quad \quad 8 \\ \quad + \quad 9 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad \quad 9 \\ \quad + \quad 7 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad \quad 2 \\ \quad + \quad 2 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad \quad 80 \\ \quad + \quad 10 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad \quad 0 \\ \quad + \quad 0 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad \quad 9 \\ \quad + \quad 3 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad \quad 6 \\ \quad + \quad 2 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad \quad 10 \\ \quad + \quad 50 \\ \hline \end{array}$$

9. $9 + 4 = \underline{\quad}$

10. $2 + 9 = \underline{\quad}$

11. $2 + 7 = \underline{\quad}$

12. $9 + 5 = \underline{\quad}$

SYSTEMATIC REVIEW 9F

Solve for the unknown. Use the blocks if needed.

13. $\underline{\quad} + 9 = 15$

14. $\underline{\quad} + 3 = 5$

Build and say the number.

15. 52

Skip count by 10 and write the numbers.

16. $\underline{\quad}, \underline{\quad}, 30, \underline{\quad}, \underline{\quad}, \underline{\quad}, \underline{\quad}, \underline{\quad}, \underline{\quad}, 100$

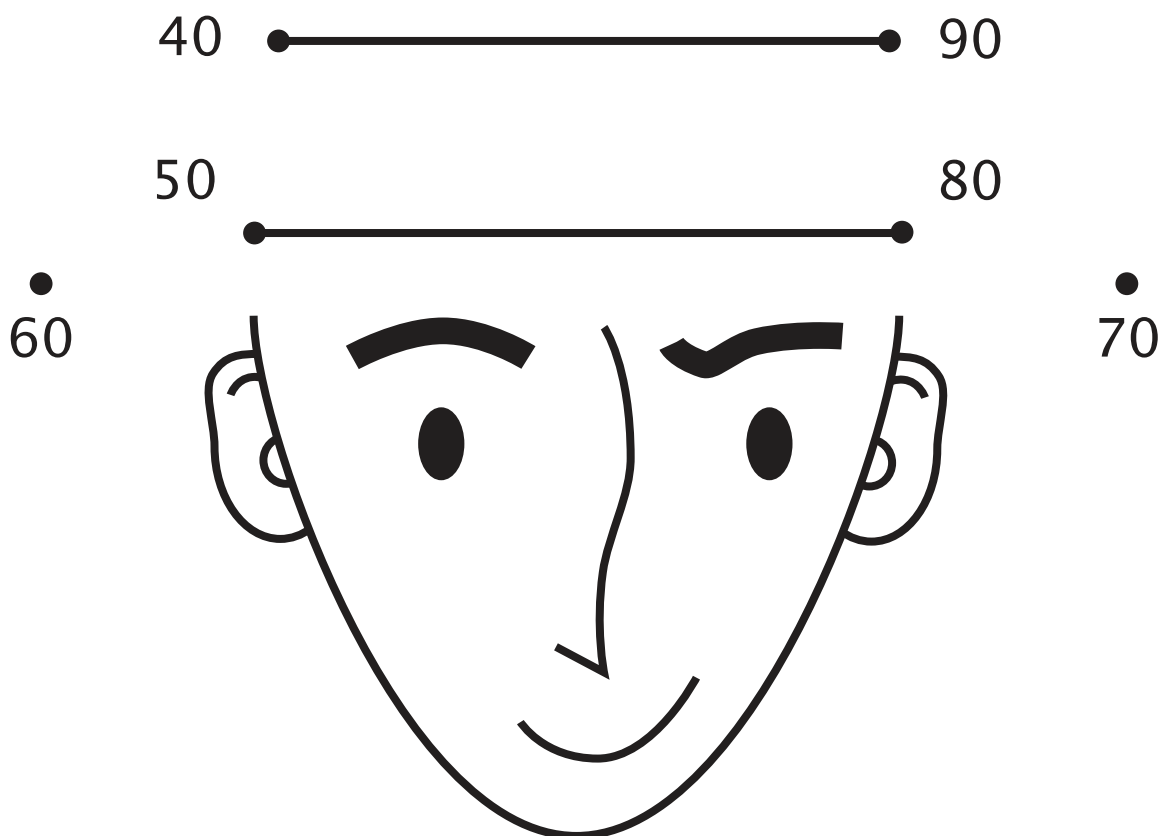
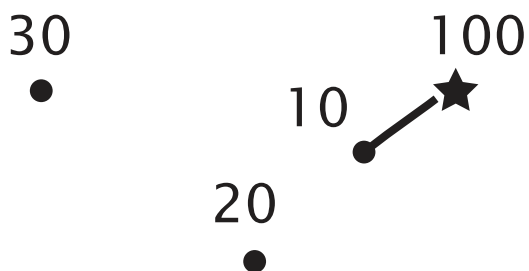
17. There are seven children in the family. Two have eaten lunch. How many more children need to eat?

18. Abby wanted 9 rubber ducks in her paddling pool. She put in 5 ducks and her friend put in 2 ducks. How many ducks are in the pool so far?

How many more ducks must Abby put in the pool to make 9?

EXTRA ACTIVITIES - ALPHA

Start at 100 and connect the dots by counting *backwards* by ten.



EXTRA ACTIVITIES - ALPHA

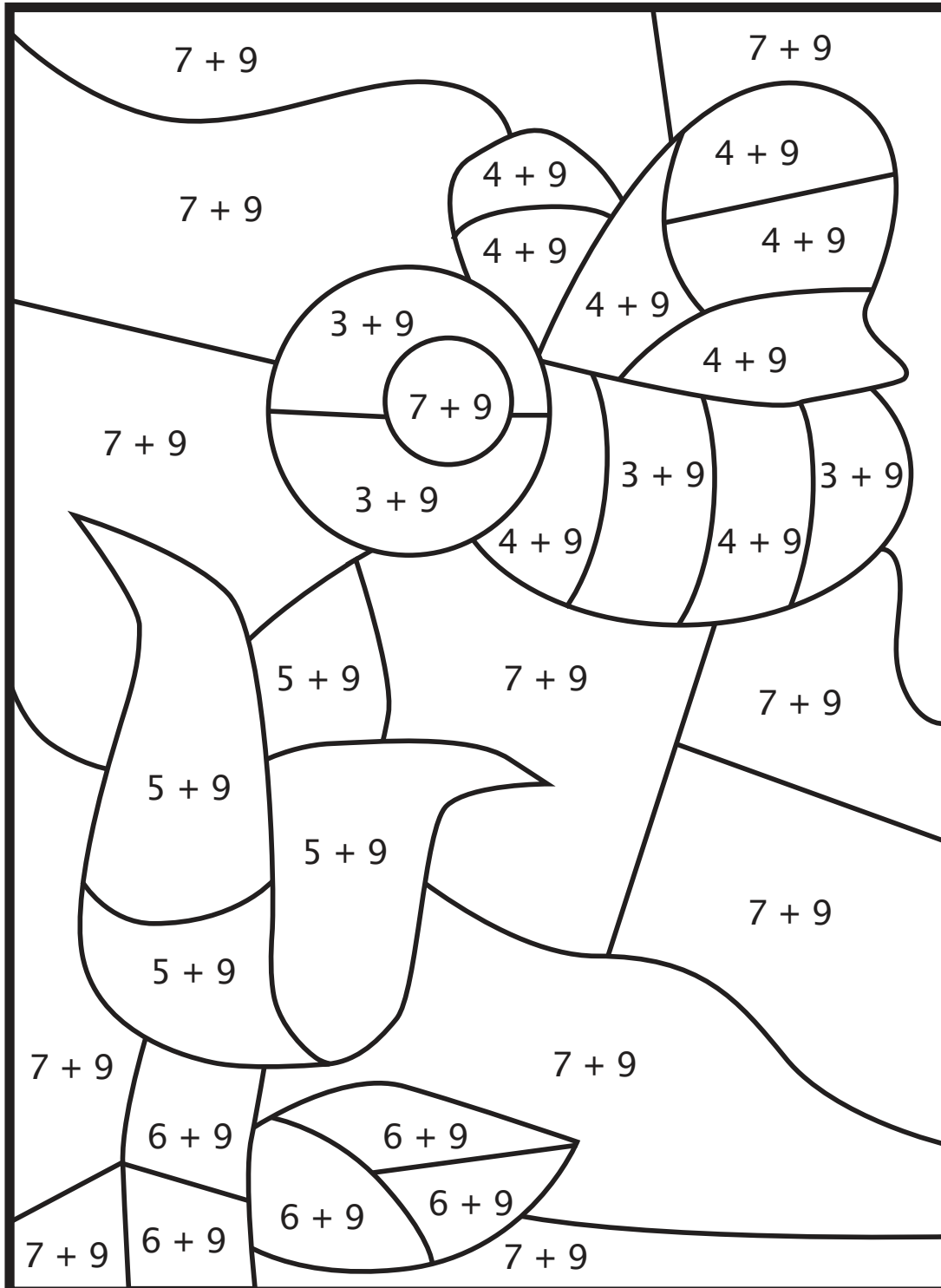
If the answer is 12, colour the space black.

If the answer is 13, colour the space yellow.

If the answer is 14, colour the space red.

If the answer is 15, colour the space green.

If the answer is 16, leave the space white.



LESSON TEST 9

Solve.

$$\begin{array}{r} 1. \quad \quad 0 \\ \quad + \quad 9 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad \quad 9 \\ \quad + \quad 7 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad \quad 6 \\ \quad + \quad 9 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad \quad 9 \\ \quad + \quad 9 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad \quad 9 \\ \quad + \quad 2 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad \quad 3 \\ \quad + \quad 9 \\ \hline \end{array}$$

7. $9 + 1 = \underline{\quad}$

8. $8 + 9 = \underline{\quad}$

9. $9 + 7 = \underline{\quad}$

10. $4 + 9 = \underline{\quad}$

11. $6 + 1 = \underline{\quad}$

12. $7 + 2 = \underline{\quad}$

LESSON TEST 9

Solve for the unknown. Use the blocks if needed.

13. _____ + 9 = 11

14. _____ + 2 = 6

15. _____ + 1 = 4

Skip count by 10 and write the numbers.

16. 10, _____, _____, _____, 50, _____, _____, _____, _____, _____

17. Jed read 9 books last week and 8 books this week.
How many books did he read altogether?

18. Alexis has six dollars. She needs eight dollars to buy a game she wants. How many more dollars does she need?

SOLUTIONS

Lesson Practice 9A

- $9+8=$ ~~$10+2=12$~~
- $9+1=$ ~~$10+3=13$~~
- $9+3=$ ~~$10+7=17$~~
- $9+4=$ ~~$10+0=10$~~
- $9+9=18$
- $9+5=14$
- $9+2=11$
- $9+3=12$
- $9+6=15$
- $1+9=10$
- $9+4=13$
- $9+8=17$
- $9+7=16$ boys
- $9+9=18$ books

Lesson Practice 9B

- $9+2=$ ~~$10+1=11$~~
- $9+5=$ ~~$10+6=16$~~
- $9+7=$ ~~$10+2=12$~~
- $9+3=$ ~~$10+4=14$~~
- $9+8=17$
- $9+4=13$
- $9+7=16$
- $9+1=10$
- $5+9=14$
- $0+9=9$
- $9+3=12$
- $9+9=18$
- $9+6=15$ sets
- $9+3=12$ CDs

Lesson Practice 9C

- $9+6=$ ~~$10+8=18$~~
- $9+9=$ ~~$10+5=15$~~
- $9+4=$ ~~$10+6=16$~~
- $9+7=$ ~~$10+3=13$~~
- $7+9=16$
- $9+8=17$
- $9+2=11$
- $9+4=13$
- $6+9=15$

- $9+3=12$
- $9+9=18$
- $9+0=9$
- $9+5=14$ grapes
- $1+9=10$ dogs

Systematic Review 9D

- $9+9=18$
- $5+2=7$
- $40+10=50$
- $9+7=16$
- $200+200=400$
- $5+9=14$
- $1+6=7$
- $9+6=15$
- $9+0=9$
- $8+9=17$
- $7+2=9$
- $9+1=10$
- $\boxed{9}+4=13$
- $\boxed{4}+2=6$
- 4 hundreds, 6 tens, and 1 unit;
four hundred sixty-one
- 10, 20, 30, 40, 50, 60, 70, 80, 90, 100
- $8+9=17$ years old
- $\boxed{1}+6=7$ guests

Systematic Review 9E

- $9+3=12$
- $4+9=13$
- $60+20=80$
- $0+4=4$
- $2+9=11$
- $9+9=18$
- $8+2=10$
- $300+100=400$
- $5+9=14$
- $2+4=6$
- $9+5=14$
- $1+7=8$
- $\boxed{9}+8=17$
- $\boxed{2}+5=7$
- 2 hundreds, 4 tens, and 9 units;
two hundred forty-nine

SOLUTIONS

16. 10, 20, 30, 40, 50, 60, 70, 80, 90, 100
17. $\boxed{3} + 9 = 12$ dollars
18. $4 + 2 = 6$ calls
 $6 + 9 = 15$ calls

Systematic Review 9F

1. $8 + 9 = 17$
2. $9 + 7 = 16$
3. $2 + 2 = 4$
4. $80 + 10 = 90$
5. $0 + 0 = 0$
6. $9 + 3 = 12$
7. $6 + 2 = 8$
8. $10 + 50 = 60$
9. $9 + 4 = 13$
10. $2 + 9 = 11$
11. $2 + 7 = 9$
12. $9 + 5 = 14$
13. $\boxed{6} + 9 = 15$
14. $\boxed{2} + 3 = 5$
15. 5 tens and 2 units; fifty-two
16. 10, 20, 30, 40, 50, 60, 70, 80, 90, 100
17. $\boxed{5} + 2 = 7$ children
18. $5 + 2 = 7$ ducks
 $7 + \boxed{2} = 9$ ducks

The unknown may be put in either the first or the second blank of the equation.

TEST 9 SOLUTIONS

Test 9

1. $0 + 9 = 9$
2. $9 + 7 = 16$
3. $6 + 9 = 15$
4. $9 + 9 = 18$
5. $9 + 2 = 11$
6. $3 + 9 = 12$

7. $9 + 1 = 10$
8. $8 + 9 = 17$
9. $9 + 7 = 16$
10. $4 + 9 = 13$
11. $6 + 1 = 7$
12. $7 + 2 = 9$

13. $\boxed{2} + 9 = 11$
14. $\boxed{4} + 2 = 6$
15. $\boxed{3} + 1 = 4$
16. 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

17. $9 + 8 = 17$ books

18. $6 + 2 = 8$ dollars