We Are a Fact Family! Integration Is the Key!

Grade Level: 1st
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Length of Unit: 10 - 45 minute integrated lessons and 1 culminating activity

I. ABSTRACT
Core Knowledge involves a process of building and expanding – of making connections. It has been said, “…Exposure is the name of the game!” To give a student multiple exposures and connections to any given concept is to allow a greater chance of understanding and retention – a true core of knowledge. This unit shows the process and gives the procedures for building, expanding, and integrating the specific skills of addition and subtraction throughout the school year and throughout the Core Knowledge content areas.

II. OVERVIEW
A. Concept Objectives
1. Students will develop an awareness of how families meet needs. (adapted from TEKS, Social Studies b1.14)
2. Students will recognize problems in addition and subtraction. (adapted from TEKS, Math b1.3)
3. Students will develop an understanding of patterns in numbers and operations. (adapted from TEKS, Math b1.5)

B. Content from the Core Knowledge Sequence
1. Living Things and Their Environments (p.37)
   - Living things live in environments to which they are particularly suited.
2. Sayings and Phrases (p. 26)
   - There’s no place like home.
   - Do unto others as you would have them do unto you.
   - If at first you don’t succeed, try, try again.
   - Practice makes perfect.
3. Computation (pp.35 and 36)
   - Addition (using concrete objects, and paper and pencil)
     - Know the meaning of the plus (+) sign.
     - Know what a “sum” is.
     - Add in any order.
     - Know how to write addition problems horizontally and vertically.
     - Solve two-digit addition problems with and without regrouping.
   - Subtraction (using concrete objects, and paper and pencil)
     - Understand subtraction as “taking away.”
     - Know the meaning of a minus sign (-).
     - Know what a “difference” is.
     - Know subtraction facts corresponding to addition facts.
     - Know how to write subtraction facts horizontally and vertically.
     - Solve two-digit addition problems with and without regrouping.
   - Patterns and Classification (p. 35)
     - Recognize patterns and predict the extension of a pattern.

C. Skill Objectives
1. The student will describe ways that families meet basic human needs. (TEKS, Social Studies b1.14A)
2. The student will describe similarities and differences in ways families meet basic human needs. (TEKS, Social Studies b1.14B)
3. The student will model and create addition and subtraction problems with concrete objects and write corresponding number sentences. (TEKS, Math b1.3A)
4. The student will learn and apply basic addition facts (sums to 18) using concrete models. (TEKS, Math b1.3B)
5. The student will identify patterns in related addition and subtraction sentences (fact families for sums to 18) such as 2+3=5, 3+2=5, 5-2=3, and 5-3=2. (TEKS, Math b1.5C)

III. BACKGROUND KNOWLEDGE
A. For Teachers

B. For Students
The students will review and build on these topics from the Kindergarten *Core Knowledge Sequence*:
1. Patterns and Classification (p.17)
   - Define a set by the common property of its elements.
2. Computation (p.18)
   - Add and subtract to ten, using concrete objects.
   - Recognize the meaning of the plus sign (+).
   - Subtraction: the concept of “taking away”; recognize the meaning of the minus sign (-).

IV. RESOURCES
V. LESSONS
Lesson One: What is a Family? – Social Studies / Science
This lesson is taught as an integrative social studies lesson during the science study of habitats (human) and gives the students the schema for “family” used in the later math lesson about fact families.

A. Daily Objectives
1. Concept Objective(s)
   a. Students will develop an awareness of how families meet needs. (adapted from TEKS, Social Studies b1.14)

2. Lesson Content
   a. Living Things and Their Environments (p.37)
      • Living things live in environments to which they are particularly suited.
   b. Sayings and Phrases (p.26)
      • There’s no place like home.

3. Skill Objective(s)
   a. The student will describe ways that families meet basic human needs. (TEKS, Social Studies b1.14A)
   b. The student will describe similarities and differences in ways families meet basic needs. (TEKS, Social Studies b1.14B)

B. Materials
   1. Who’s Who in My Family? (Loreen Leedy)
   2. All Kinds of Families (Norma Simon)
   3. big sheet of paper or chart tablet page
   4. 1 marker – teacher
   5. 1 pair of scissors – teacher
   6. white paper – class set
   7. pencil and crayons – students
   8. rubric – class set (Appendix A)
9. computer
10. Family Tree template or worksheet (Appendix B)
11. binder and binder machine

C. Key Vocabulary
1. family – a group of related people

D. Procedures/Activities
1. The teacher will read aloud *Who’s Who in My Family?* (Loreen Leedy) and *All Kinds of Families* (Norma Simon).
2. The students will orally offer descriptions / characteristics of their own family as the teacher records as a list on a big sheet of paper or chart tablet.
3. The teacher will cut apart big sheet with responses for next activity.
4. The students will sort responses into similarities and differences explaining reason for placement of response.
5. The teacher will introduce, explain, and use the Core Knowledge saying / phrase – *There’s no place like home.*
6. On a sheet of white paper, the students will draw, color, and label a picture of their own family. It must show all members of family with the family members labeled.
7. The student will share pictures of family using proper oral presentation skills.
8. The teacher will assess oral presentation using a rubric.
9. The student will self-evaluate oral presentation using a rubric.
10. The students will use the Family Tree template on the computer to create and print an “abbreviated” family tree—mom, dad, and me.
11. The teacher will compile the pages into a class book to be displayed in the class library.

E. Assessment/Evaluation
1. The teacher will monitor the completion of the similarities and differences sorting activity.
2. The teacher will assess oral presentation of family picture by using a rubric.
3. The student will self-assess oral presentation by using a rubric.
4. The teacher will visually check each student’s family tree before printing.

Lesson Two: Do You See What I See? – Science / Math
This lesson is taught as an integrative math lesson during the science study of the human body (the nervous system) and has the students use their brains for the fluency activity and for the synthesis activity.

A. Daily Objectives
1. Concept Objective(s)
   a. Students will recognize problems in addition. (adapted from TEKS, Math b1.3)
2. Lesson Content
   a. Computation (p.35)
      Addition (using concrete objects, and paper and pencil)
      • Know the meaning of the plus (+) sign.
      • Know what a “sum” is.
      • Know how to write addition problems horizontally and vertically.
      • Solve two-digit problems with or without regrouping.
3. **Skill Objective(s)**
   a. The student will model and create addition problems with concrete objects and write corresponding number sentences. (adapted from TEKS, Math b1.3A)
   b. The student will learn and apply basic addition facts (sums to 18) using concrete models. (TEKS, Math b1.3B)

   **B. Materials**
   1. *Ten Black Dots* (Donald Crews)
   2. *Domino Addition* (Lynette Long, Ph. D.)
   3. dominoes – double-six and double-nine set
   4. chalk and chalkboard
   5. Domino Addition worksheet (Appendix C)
   6. computer

   **C. Key Vocabulary**
   1. sum – the answer you get when you add two numbers together
   2. vertical – upright
   3. horizontal – positioned like a meeting of the earth and sky

   **D. Procedures/Activities**
   1. The teacher will read aloud *Ten Black Dots* (Donald Crews) and *Domino Addition* (Lynette Long, Ph. D.)
   2. The students will orally brainstorm (fluency) other things that have dots of any color. (If “dominoes” is never said, the teacher can give clues or say it.)
   3. The teacher will read aloud *Domino Addition* (Lynette Long, Ph. D.).
   4. The student will choose an actual domino from a double-six set and give the corresponding addition fact as the teacher demonstrates writing the addition number sentence vertically.
   5. The teacher will introduce the vocabulary of vertical (vertically) and horizontal (horizontally).
   6. After all have had a turn, the teacher calls students one-by-one to the chalkboard to rewrite the exact same number sentence horizontally (synthesis).
   7. The students will independently complete the Domino Addition worksheet while selecting actual dominoes to draw.
   8. The students will rewrite the same number sentence vertically (on the back).
   9. The students may also use the double-nine set dominoes as a challenge.
   10. The teacher will show students the domino form with the added “sum box” (a rectangular box below and connected to the domino double box) and use the terms “part-part-whole”.
   11. The students will take turns working at the computer to play a concentration memory match addition and subtraction game -- [http://www.aplusmath.com/Games/index.html](http://www.aplusmath.com/Games/index.html).

   **E. Assessment/Evaluation**
   1. The teacher will guide, correct, and record correct responses as students orally give number sentences.
   2. The teacher will assess student understanding with the completion of the Domino Addition worksheet.
   3. The computer will give immediate assessment of skills during the game.
Lesson Three: Take It, Make It, (Trace It), Break It – Science / Math.
This lesson is taught as an integrative math lesson during the science study of the human body (the muscular system) and has students use hand and arm muscles to manipulate unifix cubes.

A. Daily Objectives
1. Concept Objective(s)
   a. Students will recognize problems in subtraction. (adapted from TEKS, Math b1.14)
2. Lesson Content
   a. Computation (p. 36)
      Subtraction (using concrete objects, and paper and pencil)
      • Understand subtraction as “taking away.”
      • Know the meaning of a minus sign (-).
      • Know what a “difference” is.
      • Know how to write subtraction facts horizontally and vertically.
      • Solve two-digit addition problems with and without regrouping.
   b. Sayings and Phrases
      • If at first you don’t succeed, try, try again.
3. Skill Objective(s)
   a. The student will model and create subtraction problems with concrete objects and write corresponding number sentences. (adapted from TEKS, Math b1.3A)

B. Materials
1. The Muscular System (Helen Frost)
2. unifix cubes
3. chalk and chalkboard
4. white paper – class set
5. pencil – students
6. computer

C. Key Vocabulary
1. difference – the number you have left after you subtract
2. vertical – upright
3. horizontal – positioned like a meeting of the earth and sky

D. Procedures/Activities
1. The teacher will read aloud The Muscular System (Helen Frost).
2. The students will take turns doing any simple action (jumping, snapping, winking, etc.) as the other students say which muscles are working.
3. The teacher will emphasize pages 7 and 13 showing the arm and hand muscles.
4. The teacher will model Take It, Make It, Break It several times. (instructions follow)
5. The students will imitate the actions of the teacher to learn the game as they verbalize the steps – take it, make it, break it.
6. The students will use hand and arm muscles to play Take It, Make It, Break It.
7. The teacher will separate students into partners for this activity.
8. One student from the partner group will pick up from 1 to 9 unifix cubes from the desk – take it.
9. The student will link the cubes together to form a stick – make it.
10. The student will show the stick to the partner to count for the first number of the subtraction number sentence.

11. The student who made the stick will separate it into two parts without the partner seeing the parts and then show only one part of the broken stick – break it.

12. The other student will count the cubes now shown and “count up” to find the answer of how many are missing.

13. The teacher will allow students time for more than one opportunity and remind students to give each other more than one chance at an answer by explaining the phrase – If at first you don’t succeed, try, try again.

14. The students self-check the answer by looking at the missing part of the stick.

15. After experiencing Make It, Take It, Break It, the teacher will demonstrate the Trace It modification where students work alone instead of with partners.

16. The teacher will again model the steps of Take It and Make It. (instructions previous)

17. The teacher will then add in for students to Trace It (the stick of cubes) onto a sheet of white paper (and count the cubes) – trace it.

18. The teacher will again model the step of Break It and model drawing an X on the corresponding paper cubes that were subtracted.

19. The teacher will demonstrate writing subtraction number sentences vertically and horizontally.

20. The students will write the corresponding number sentence beside the cubes drawn.

21. The students will complete 5 subtraction number sentences vertically and redraw and rewrite those same 5 number sentences horizontally.

22. The students may also pick up more than 10 cubes to subtract from as a challenge.

23. The teacher will review the terms “part-part-whole” for addition and use the terms “whole-part-part” for subtraction.

24. The students will take turns working on the computer playing an addition and subtraction baseball game -- http://www.funbrain.com/math/index.html.

E. Assessment/Evaluation

1. The teacher will monitor as students imitate actions to learn the game.

2. The students will peer and self assess during Make It, Take It, Break It.

3. The teacher will assess student understanding with the 10 subtraction number sentences on the white paper.

4. The computer will give immediate assessment of skills during the game.

Lesson Four: Light 7 Candles for Kwanzaa – Social Studies / Math

This lesson is taught as an integrative math lesson during the history study of the world religions (although Kwanzaa is not a religion, it holds significance, is culturally based, and is bound by traditions—“respect and balance”) — and reinforces that Kwanzaa is for seven days.

A. Daily Objectives

1. Concept Objective(s)
   a. Students will recognize problems in addition and subtraction. (adapted from TEKS, Math b1.3).

2. Lesson Content
   a. Computation (pp.35 and 36)
      Addition (using concrete objects, and paper and pencil)
Know the meaning of the plus (+) sign.
Know what a “sum” is.
Add in any order.
Know how to write addition problems horizontally and vertically.
Solve two-digit addition problems with and without regrouping.
Subtraction (using concrete objects, and paper and pencil)
Understand subtraction as “taking away.”
Know the meaning of a minus sign (-).
Know what a “difference” is.
Know how to write subtraction facts horizontally and vertically.
Solve two-digit addition problems with and without regrouping.

b. Sayings and Phrases
• Do unto others as you would have them do unto you.

3. Skill Objective(s)
a. The student will model and create addition and subtraction problems with concrete objects and write corresponding number sentences. (TEKS, Math b1.3A)

b. The student will learn and apply basic addition facts (sums to 18) using concrete models (TEKS, Math b1.3B)

B. Materials
1. My First Kwanzaa Book (Deborah M. Newton Chocolate)
2. chalk and chalkboard
3. manipulatives – 7 (or more later) per student
4. kinara worksheet (Appendix D) (The picture on this appendix must be enlarged to page size before use.)
5. pencil – students

C. Key Vocabulary
1. sum – the answer you get when you add two numbers together
2. difference – the number you have left after you subtract
3. vertical – upright
4. horizontal – positioned like a meeting of the earth and sky

D. Procedures/Activities
1. The teacher will discuss and tell students that we are learning about another culture / tradition and to remember to do unto others as you would have them do unto you.
2. The teacher will read aloud My First Kwanzaa Book (Deborah M. Newton Chocolate).
3. While revisiting the book, the students will look for the kinara at the bottom right-hand corner of each page and count the candles as they are being lit.
4. The teacher will model writing addition and subtraction number sentence to correspond with the picture each time (i.e.: one candle lit would be 1+6=7 or 6+1=7 and 7-6=1 or 7-1=6)
5. The students will use 7 manipulative to recreate the number sentence the teacher is showing.
6. The students will write 7 addition or subtraction number sentences (either vertically or horizontally) onto the candles of the kinara worksheet following the example that the teacher used – all sums and differences must be 7.
7. The students may also begin a subtraction number sentences with a number larger than 18 as a challenge.
8. The students will take turns orally sharing their favorite number sentence with the class responding “equal 7” each time.
9. The teacher will review the terms “part-part-whole”.
10. The teacher will review the terms “whole-part-part”.

E. Assessment/Evaluation
1. The teacher will monitor as students model number sentences with manipulatives.
2. The teacher will assess student understanding with the addition and subtraction number sentences given on the kinara worksheet.
3. The students will assess each other orally during the Equals 7 game as needed.

Lesson Five: Light 8 Candles for Hanukkah – Social Studies / Math
This lesson is taught as an integrative math lesson during the history study of the world religions (Judaism) and reinforces that Hanukkah is for eight days.

A. Daily Objectives
1. Concept Objective(s)
   a. Students will recognize problems in addition and subtraction. (adapted from TEKS, Math b1.3).
2. Lesson Content
   a. Computation (pp.35 and 36)
      Addition (using concrete objects, and paper and pencil)
      • Know the meaning of the plus (+) sign.
      • Know what a “sum” is.
      • Add in any order.
      • Know how to write addition problems horizontally and vertically.
      • Solve two-digit addition problems with and without regrouping.
      Subtraction (using concrete objects, and paper and pencil)
      • Understand subtraction as “taking away.”
      • Know the meaning of a minus sign (-).
      • Know what a “difference” is.
      • Know how to write subtraction facts horizontally and vertically.
      • Solve two-digit addition problems with and without regrouping.
   b. Sayings and Phrases
      • Do unto others as you would have them do unto you.
3. Skill Objective(s)
   a. The student will model and create addition and subtraction problems with concrete objects and write corresponding number sentences. (TEKS, Math b1.3A)
   b. The student will learn and apply basic addition facts (sums to 18) using concrete models (TEKS, Math b1.3B)

B. Materials
1. Our Eight Nights of Hanukkah (Michael J. Rosen)
2. chalk and chalkboard
3. manipulatives – 8 (or more later) per student
4. menorah worksheet (Appendix D) (The picture on this appendix must be enlarged to page size before use.)
5. pencil – students

C. Key Vocabulary
1. sum – the answer you get when you add two numbers together
2. difference – the number you have left after you subtract
3. vertical – upright
4. horizontal – positioned like a meeting of the earth and sky

D. Procedures/Activities
1. The teacher will discuss and remind students that we are learning about another culture / tradition and to remember to… *Do unto others as you would have them do unto you.*
2. The teacher will read aloud *Our Eight Nights of Hanukkah* (Michael J. Rosen).
3. While revisiting the book, the students will look for the menorah as it appears throughout the story.
4. The teacher will model writing addition and subtraction number sentence to correspond with the candles of a menorah being lit (i.e.: one candle lit would be 1+7=8 or 7+1=8 and 8-7=1 or 8-1=7).
5. The students will use 8 manipulatives to recreate the number sentence the teacher is showing.
6. The students will write 8 addition or subtraction number sentences (either vertically or horizontally) onto the candles of the menorah worksheet following the example that the teacher used – all sums and differences must be 8.
7. The students may also begin subtraction number sentences with a number larger than 18 as a challenge.
8. The students will take turns orally sharing their favorite number sentence with the class responding “equal 8” each time.
9. The teacher will review the terms “part-part-whole”.
10. The teacher will review the terms “whole-part-part”.

E. Assessment/Evaluation
1. The teacher will monitor as students model number sentences with manipulatives.
2. The teacher will assess student understanding with the addition and subtraction number sentences given on the menorah worksheet.
3. The students will assess each other orally during the Equals 8 game as needed.

Lesson Six: A Bat is a Bat is a Bat…A Fact is a Fact is a Fact… – Science / Math
This lesson is taught as an integrative math lesson during the science study of habitats (specific habitats and the food chain) and reinforces the concept that bats sleep hanging upside down.

A. Daily Objectives
1. Concept Objectives
   a. Students will recognize problems in addition. (adapted from TEKS, Math b1.3).
   b. Students will develop an understanding of patterns in numbers and operations. (adapted from TEKS, Math b1.5)

2. Lesson Content
   a. Computation (p.35)  
      Addition (using concrete objects, and paper and pencil)  
      • Know the meaning of the plus (+) sign.  
      • Know what a “sum” is.
• Add in any order.
• Know how to write addition problems horizontally and vertically.

3. Skill Objective(s)
   a. The student will model and create addition problems with concrete objects and write corresponding number sentences. (adapted from TEKS, Math b1.3A)
   b. The student will learn and apply basic addition facts (sums to 18) using concrete models (TEKS, Math b1.3B)
   c. The student will identify patterns in related addition sentences. (adapted from TEKS, Math b1.5C)

B. Materials
1. Stellaluna (Janell Cannon)
2. big Venn Diagram
3. marker – teacher
4. chalk and chalkboard
5. black construction paper – class set
6. scissors – students
7. bat worksheet (Appendix E)
8. pencil – students
9. glue – students

C. Key Vocabulary
1. sum – the answer you get when you add two numbers together
2. upside down – the upper and lower parts reversed

D. Procedures/Activities
1. The teacher will read aloud Stellaluna (Janell Cannon).
2. The students will orally offer descriptions / characteristics of birds and bats.
3. The students will help each other decide (with a thumbs up for correct, thumbs down for incorrect sign) where to put the information as the teacher records it onto a big sheet of paper in a Venn diagram – bats, birds, both.
4. The teacher will display this in the classroom after making.
5. The teacher will emphasize one difference between birds and bats is that bats hang upside down and birds do not.
6. The teacher will demonstrate upside down with several objects in the classroom as students use thumbs up/thumbs down if the item would still be able to be used while upside down.
7. The teacher writes a vertical addition math sentence on the board for the students to evaluate with thumbs up/thumbs down.
8. The teacher will demonstrate that an addition math sentence CAN have the upper and lower parts reversed and still have the correct answer both ways.
9. The teacher will demonstrate that a sum does not change by using several bats with dots on the wings (like those on the worksheet). It does not matter that the bat is upside down – the dots remain the same.
10. The students will complete the bats worksheet page by cutting, folding, writing the answer, and gluing inside a “cave” made of black paper.

E. Assessment/Evaluation
1. The students will peer evaluate with hand signs during Venn diagram and demonstration of upside down.
2. The teacher will assess student understanding with the bat cave page.
Lesson Seven: *Flip and Flop* Flip-Flop Facts – Science / Math

This lesson is taught as an integrative math lesson during the science study of habitats (specific habitats and the food chain) and reinforces – through the pictures in the book – the habitat of one type of penguin.

A. **Daily Objectives**

1. **Concept Objectives**
   a. Students will recognize problems in addition. (adapted from TEKS, Math b1.3).
   b. Students will develop an understanding of patterns in numbers and operations. (adapted from TEKS, Math b1.5)

2. **Lesson Content**
   a. Computation (p.35)
      Addition (using concrete objects, and paper and pencil)
      - Know the meaning of the plus (+) sign.
      - Know what a “sum” is.
      - Add in any order.
      - Know how to write addition problems horizontally and vertically.
      - Solve two-digit addition problems with and without regrouping.
   b. Sayings and Phrases (p.26)
      - There’s no place like home.

3. **Skill Objective(s)**
   a. The student will model and create addition problems with concrete objects and write corresponding number sentences. (adapted from TEKS, Math b1.3A)
   b. The student will learn and apply basic addition facts (sums to 18) using concrete models (TEKS, Math b1.3B)
   c. The student will identify patterns in related addition sentences. (adapted from TEKS, Math b1.5C)

B. **Materials**

1. *Flip and Flop* (Dawn Apperley)
2. chalk and chalkboard
3. dominoes – double-six and double-nine set
4. Flip-Flop Domino Addition worksheet (Appendix F)
5. Penguin Practice-Makes-Perfect Page (Appendix G)
6. pencil – students
7. computer

C. **Key Vocabulary**

1. sum – the answer you get when you add two numbers together
2. flip-flop – reversed order

D. **Procedures/Activities**

1. The teacher will read aloud *Flip and Flop* (Dawn Apperley).
2. The teacher will emphasize that whatever Flip did, Flop did too – if Flip moved, Flop did too.
3. The teacher will demonstrate flip-flop with several objects and even students in the classroom.
4. The students will take turns demonstrating flip-flop as the other students give a flip-flop hand signal if correct.
5. The teacher will review domino addition number sentences while writing the addition number sentence on the chalkboard.
6. The teacher will model the flip-flop fact by turning the domino over and by reversing the addends in the number sentence – emphasizing that the sum does not change.
7. The students will independently complete the Flip-Flop Domino Addition worksheet.
8. The students will rewrite the same number sentence vertically (on the back).
9. The students may also use the double-nine set dominoes as a challenge.
10. The teacher will explain that… practice makes perfect… as the student will review vertical addition on the Penguin Practice-Makes-Perfect Page.
11. The teacher will demonstrate to add one column at a time for double the practice of addition.
12. The students will take turns working on the computer making an addition and subtraction flashcards -- http://www.aplusmath.com/Flashcards/addition.html

E. Assessment/Evaluation
1. The students will peer evaluate with hand signs during the demonstration of flip-flop.
2. The teacher will assess student understanding with the Flip-Flop Domino Addition worksheet.
3. The teacher will assess student understanding with the Penguin Practice-Makes-Perfect Page.
4. The computer will give immediate assessment of skills during the game.

Lesson Eight: Monkey-ing Around – Science / Math
This lesson is taught as an integrative math lesson during the science study of habitats (specific habitats and the food chain) and reinforces – through the pictures in the book – the relationship between living things.

A. Daily Objectives
1. Concept Objectives
   a. Students will recognize problems in addition and subtraction. (adapted from TEKS, Math b1.3).
   b. Students will develop an understanding of patterns in numbers and operations. (adapted from TEKS, Math b1.5)

2. Lesson Content
   a. Computation (pp.35 and 36)
      Addition (using concrete objects, and paper and pencil)
      • Know the meaning of the plus (+) sign.
      • Know what a “sum” is.
      • Add in any order.
      Subtraction (using concrete objects, and paper and pencil)
      • Understand subtraction as “taking away.”
      • Know the meaning of a minus sign (-).
      • Know what a “difference” is.
      Patterns and Classification
      • Recognize patterns and predict the extension of a pattern.
a. The student will model and create addition and subtraction problems with concrete objects and write corresponding number sentences. (TEKS, Math b1.3A)
b. The student will learn and apply basic addition facts (sums to 18) using concrete models (TEKS, Math b1.3B)
c. The student will identify patterns in related addition and subtraction sentences (fact families for sums to 18) such as 2+3=5, 3+2=5, 5-2=3, and 5-3=2. (adapted from TEKS, Math b1.5C)
d. The student will model and create addition and subtraction problems with concrete objects and write corresponding number sentences. (TEKS, Math b1.3A)
e. The student will learn and apply basic addition facts (sums to 18) using concrete models (TEKS, Math b1.3B)
f. The student will identify patterns in related addition and subtraction sentences (fact families for sums to 18) such as 2+3=5, 3+2=5, 5-2=3, and 5-3=2. (adapted from TEKS, Math b1.5C)

B. Materials
1. 1 + 1 Take Away Two! (Michael Berenstain)
2. chalk and chalkboard
3. Opposites Attract worksheet (Appendix H)
4. pencil – students
5. Monkey-ing Around fact family game pattern (Appendix D) (The pattern on the page must be enlarged to two sizes and fact families added before use.)
6. binder and binding machine
7. computer

C. Key Vocabulary
1. sum – the answer you get when you add two numbers together
2. difference – the number you have left after you subtract
3. flip-flop – reversed order
4. opposites – as different as possible
5. fact family – a group of related math facts

D. Procedures/Activities
1. The teacher will read aloud 1 + 1 Take Away Two! (Michael Berenstain).
2. While reading the book the teacher will encourage active involvement from the students to respond with answers to the math problems and with predictions of what will be on the next page.
3. After reading the teacher will point out the patterns and relationships of the number sentences in the book.
4. The teacher will reproduce the end pages of the book on the chalkboard.
5. The students will identify the patterns and relationships found in the number sentences.
6. The teacher will guide the students though the Opposites Attract worksheet and use the term fact family when all four number sentences are completed.
7. The students will then play the Monkey-ing Around game. (instructions follow)
8. The student will choose one small monkey with an addition or subtraction number sentence on it.
9. The student will find the correct momma monkey (larger) with the three numbers of the fact family on it and place the small monkey with the larger one.
10. The four students in each fact family will recite the corresponding facts for the class to hear.

11. The students will create their own domino-looking box (as shown on the worksheet) and corresponding fact family (on the back of the worksheet).

12. The students will take turns sharing their fact family with the class and will receive a celebration for correct answers or will receive guidance to correct incorrect responses.

13. The teacher will collect work into a Fact Family book to be placed in the class library for review and display.

14. The students will take turns working on the computer making an addition and subtraction flashcards -- [http://www.aplusmath.com/Flashcards/addition.html](http://www.aplusmath.com/Flashcards/addition.html).

E. Assessment/Evaluation

1. The teacher will assess student understanding with the Monkey-ing Around game.

2. The students will peer assess through the Monkey-ing Around game.

3. The computer will give immediate assessment of skills during the game.

Lesson Nine: Ducks in a Row – Science / Math

This lesson is taught as an integrative math lesson during the science study of habitats (specific habitats) and reinforces – through the song – the relationship between living things.

A. Daily Objectives

1. Concept Objective(s)
   a. Students will recognize problems in addition and subtraction. (adapted from TEKS, Math b1.3).
   b. Students will develop an understanding of patterns in numbers and operations. (adapted from TEKS, Math b1.5)

2. Lesson Content
   a. Computation (pp.35 and 36)
      Addition (using concrete objects, and paper and pencil)
      • Know the meaning of the plus (+) sign.
      • Know what a “sum” is.
      • Add in any order.
      Subtraction (using concrete objects, and paper and pencil)
      • Understand subtraction as “taking away.”
      • Know the meaning of a minus sign (-).
      • Know what a “difference” is.
      • Know subtraction facts corresponding to addition facts.
      Patterns and Classification
      • Recognize patterns and predict the extension of a pattern.

3. Skill Objective(s)
   a. The student will model and create addition and subtraction problems with concrete objects and write corresponding number sentences. (TEKS, Math b1.3A)
   b. The student will learn and apply basic addition facts (sums to 18) using concrete models (TEKS, Math b1.3B)
   c. The student will identify patterns in related addition and subtraction sentences (fact families for sums to 18) such as 2+3=5, 3+2=5, 5-2=3, and 5-3=2. (adapted from TEKS, Math b1.5C)
B. **Materials**
1. Four Little (fact family) Ducks (Appendix I)
2. Ducks In a Row fact family game pattern – for class game and students (Appendix D) (The pattern on the page must be enlarged to two sizes and fact families added before use.)
3. 2 dice
4. pencil, crayons, and scissors – students
5. large envelope
6. computer

C. **Key Vocabulary**
1. sum – the answer you get when you add two numbers together
2. difference – the number you have left after you subtract
3. flip-flop – reversed order
4. opposites – as different as possible
5. fact family – a group of related math facts

D. **Procedures/Activities**
1. The teacher and students will sing and dramatize the song Four Little Ducks.
2. The teacher will sing the new version of the Four Little (fact family) Ducks to the class.
3. The students will then play the Ducks In a Row game by following the instructions in the song.
4. The student will choose one small duck with an addition or subtraction number sentence on it.
5. The student will find the correct momma duck (larger) with the three numbers of the fact family on it and place the small duck with the larger one.
6. The four students in each fact family will recite the corresponding facts for the class to hear.
7. The students return to their desks after roll dice to “choose” the first two numbers for their own Ducks In a Row game.
8. The students complete ducks by writing numbers on larger duck, writing number sentences on smaller ducks, coloring, and cutting.
9. The teacher will put each student’s ducks in one big envelope to make a Ducks In a Row game to use for class review.
10. The students will take turns working on the computer making an addition and subtraction flashcards -- [http://www.aplusmath.com/Flashcards/addition.html](http://www.aplusmath.com/Flashcards/addition.html).

E. **Assessment/Evaluation**
1. The teacher will assess student understanding with the Ducks In a Row game.
2. The students will peer assess through the Ducks In a Row game.
3. The teacher will assess student understanding with the creation of a fact family for the class game.
4. The computer will give immediate assessment of skills during the game.

**Lesson Ten: You Light Up My Life! – Science / Math**

*This lesson is taught as an integrative math lesson during the science study of habitats (specific habitats and food chain) and reinforces the relationship between living things.*

A. **Daily Objectives**
1. Concept Objective(s)
a. Students will recognize problems in addition and subtraction. (adapted from TEKS, Math b1.3).
b. Students will develop an understanding of patterns in numbers and operations. (adapted from TEKS, Math b1.5)

2. Lesson Content
   a. Computation (pp.35 and 36)
      Addition (using concrete objects, and paper and pencil)
      • Know the meaning of the plus (+) sign.
      • Know what a “sum” is.
      • Add in any order.
      Subtraction (using concrete objects, and paper and pencil)
      • Understand subtraction as “taking away.”
      • Know the meaning of a minus sign (-).
      • Know what a “difference” is.
      • Know subtraction facts corresponding to addition facts.
   
   b. Patterns and Classification
      • Recognize patterns and predict the extension of a pattern.

3. Skill Objective(s)
   a. The student will model and create addition and subtraction problems with concrete objects and write corresponding number sentences. (TEKS, Math b1.3A)
   b. The student will learn and apply basic addition facts (sums to 18) using concrete models (TEKS, Math b1.3B)
   c. The student will identify patterns in related addition and subtraction sentences (fact families for sums to 18) such as 2+3=5, 3+2=5, 5-2=3, and 5-3=2. (adapted from TEKS, Math b1.5C)

B. Materials
   1. Bugs! Bugs! Bugs! (Bob Barner)
   2. The Very Lonely Firefly (Eric Carle).
   3. chalk and chalkboard
   4. You Light Up My Life! Worksheet (Appendix J)
   5. pencil and crayons – students
   6. computer

C. Key Vocabulary
   1. sum – the answer you get when you add two numbers together
   2. difference – the number you have left after you subtract
   3. flip-flop – reversed order
   4. opposites – as different as possible
   5. fact family – a group of related math facts

D. Procedures/Activities
   1. The teacher will read aloud Bugs! Bugs! Bugs! (Bob Barner) and The Very Lonely Firefly (Eric Carle).
   2. The teacher will emphasize the last page where the firefly found its “family”.
   3. The teacher will review the definition of a family and a fact family.
   4. The students will take turns going to the chalkboard to write a number sentence and the corresponding number sentences to make the fact family.
   5. The student will complete the You Light Up My Life! worksheet.
6. The student will draw fireflies (on the back) and correct the fact-family fireflies from the front side.
7. The students will take turns working on the computer making an addition and subtraction flashcards -- [http://www.aplusmath.com/Flashcards/addition.html](http://www.aplusmath.com/Flashcards/addition.html).

E. **Assessment/Evaluation**
   1. The teacher will assess student understanding with the fact family review.
   2. The students will peer assess through the fact family review.
   3. The teacher will assess student understanding with the You Light Up My Life! worksheet.
   4. The computer will give immediate assessment of skills during the game.

VI. **CULMINATING ACTIVITY**

   *This lesson is taught as an integrative math lesson during the history study of early exploration of the American West (Wilderness Road) and reinforces westward growth.*

   A. The students will dress in appropriate western-type apparel.
   The teacher will read *Deputy Dan and the Bank Robbers* (Joseph Rosenbloom).
   The teacher will emphasize that there are four in the gang to be rounded up.
   The teacher will review that there are 4 problems in a fact family.
   The student will complete the Fact Family Four worksheet. (Appendix K)
   The student will be “deputized” as a Fact Family Fun Finder.
   The student will receive a tin star (make a foil star), drink cactus juice (green colored drink), and eat snakes (gummy worms).

VII. **HANDOUTS/WORKSHEETS**

   1. Appendix A – rubric
   2. Appendix B – Family Tree template / worksheet
   3. Appendix C – Domino Addition worksheet
   4. Appendix D – kinara pattern, menorah pattern, monkey pattern, duck pattern
   5. Appendix E – bats worksheet
   6. Appendix F – Flip-Flop Domino Addition
   7. Appendix G – Penguin Practice-Makes-Perfect worksheet
   8. Appendix H – Opposites Attract
   9. Appendix I – Four Little (fact family) Ducks Song
   10. Appendix J – You Light Up My Life! Worksheet
   11. Appendix K – Fact Family Four worksheet

VIII. **BIBLIOGRAPHY**


Appendix A

Name

My Family – Self Evaluation

I drew every member of my family. ☺ ☹
I labeled each picture that I drew. ☺ ☹
I stood in front of my class. ☺ ☹
I stood still while speaking. ☺ ☹
I spoke loudly enough for all to hear. ☺ ☹

Student’s Name

My Family – Teacher Evaluation

The student drew every member of the family. ☺ ☹
The student labeled each picture that was drawn. ☺ ☹
The student stood in front of the class. ☺ ☹
The student stood still while speaking. ☺ ☹
The student spoke loudly enough for all to hear. ☺ ☹
Appendix C

Name

Domino Addition

Draw the dots on the domino. Write the numbers on the lines. Redraw and rewrite the problems vertically on the back.

___ + ___ = ___

___ + ___ = ___

___ + ___ = ___

___ + ___ = ___

___ + ___ = ___

___ + ___ = ___
Appendix D

kinara pattern – enlarge to page size

menorah pattern – enlarge to page size

Monkey-ing Around pattern – enlarge

Ducks in a Row pattern – enlarge
Appendix E

Cut out each bat. Fold wings together and write the answer on the back. Hang upside down in the cave that you drew.
Appendix F

Name

Flip-Flop Domino Addition

Draw the dots on the domino. Write the numbers on the lines. Flip-flop the domino and write the fact again. Redraw and rewrite the problems vertically on the back.

\[ \_\_\_ + \_\_\_ = \_\_\_ \]

\[ \_\_\_ + \_\_\_ = \_\_\_ \]

\[ \_\_\_ + \_\_\_ = \_\_\_ \]

\[ \_\_\_ + \_\_\_ = \_\_\_ \]

\[ \_\_\_ + \_\_\_ = \_\_\_ \]
Appendix G

Penguin Practice-Makes-Perfect Page

Work the ones column and then the tens column for double the practice!!

75 +24 ________
21 +85 ________
49 +30 ________

14 +32 ________
22 +17 ________
71 +15 ________
63 +34 ________

87 +12 ________
53 +33 ________
22 +66 ________
34 +51 ________
Addition and subtraction are opposites. One undoes the other.

**Addition puts things together.**

```
  \[ 4 + 3 = 7 \]
```

**Subtraction takes things apart.**

```
  \[ 7 - 3 = 4 \]
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**Opposites Attract**

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Appendix 1

Four Little Ducks

Four little ducks that I once knew,
Addition and subtraction and equal signs, too,
But the momma duck with the really big quack,
She rules the others with the numbers on her back.
The numbers on her back,
The numbers on her back,
She rules the others with the numbers on her back.

You must look at your little duck.
Match the numbers. Use your eyes--not luck.
If they match exactly,
You belong to the number family.
Number family,
Number family,
You belong to the number family.

Stand right by your momma duck.
Stay very still as if you’re stuck.
Check everyone’s numbers--look and see.
There are only 4 in a number family.
Number family,
Number family,
There are only 4 in a number family.

Check and check and check and check.
It shouldn’t take but just a sec.
Do your numbers match exactly?
Then you belong to the number family.
Number family,
Number family,
Then you belong to the number family.
You Light Up My Life!
Look at the number sentences on the wings. If they are a fact family, write the 3 numbers in the middle and color to "light up" the firefly.
Fact Family Four

1. Find it!
   - 2 + 3 = 5
   - 3 + 2 = 5
   - 5 - 2 = 3
   - 5 - 3 = 2

2. Finish it!
   - 2 + 7 = __
   - 7 + 2 = __
   - 7 - 2 = __
   - 7 - 5 = __

3. Fix it!
   - 8 + 1 = 9
   - 1 + 7 = 9
   - 9 - 2 = 8
   - 9 - 8 = 1

4. Furnish it!
   - __ + __ = __
   - __ + __ = __
   - __ - __ = __
   - __ - __ = __

Congratulations! You have just been deputized as Fact Family Fun Finder!!