

GO

MATHS

Teacher Sourcebook

Sample Unit



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Counting On — Basic Facts and Beyond

Content Outcome

NES 1.2 Combines, separates and compares collections of objects, describes using everyday language and records using informal methods

Mathematical Background

Students are familiar with the concept of addition and this unit allows students the chance to develop and practise the count-on-2 number-fact strategy. This strategy was introduced in Unit 15, 'Counting On — Basic Facts', and this unit reviews the strategy concretely and pictorially, as well as begins practise of the number facts within the count-on-1 or -2 strategy cluster. Confidence with these basic number facts helps students move towards efficient mental computation strategies. Students also begin skip-counting by twos which reinforces verbal statements of even and odd numbers and facilitates counting on two.

Lesson Overview

- 28.1 Reviewing Turnaround Facts
- 28.2 Counting by Twos to 10
- 28.3 Counting by Twos to 20
- 28.4 Reviewing the Count-on-2 Number-Fact Strategy
- 28.5 Using a Number Track to Count on 2 to Fifteen

Language

The students will use and develop the following language:
turnaround, turnaround fact, count by twos, add, number track

Sequence of related units for Early Stage 1



Content Indicators

On completion of this unit, the students should be able to

NES 1.2

- A demonstrate turnaround facts using concrete materials
- B write an addition fact and its turnaround
- C use a counting-on strategy to calculate sums

Techniques

The following tools can be used to assess the content indicators.

1. Learning Centre Activities **A B C**

Use the learning centre activities described over the page to create opportunities for informal assessment through observation.

2. Diagnostic Probe

If necessary, use the following for an in-depth informal analysis of a student's understanding.

- a. Give the student some connecting cubes of two different colours. Direct him or her to join 3 cubes of one colour and 2 cubes of another colour. Have the student join the two cube sticks together and say the number fact that matches ($3 + 2 = 5$). Encourage the student to write the number fact and then use the cube stick to demonstrate the turnaround fact. The student writes the turnaround fact, then uses the cubes to demonstrate another number fact and the corresponding turnaround fact. Have the student write both these facts. **A B**
- b. Place the count-on-2 dominoes from a Double-Nine Dot Domino **R** set facedown on a table. Have the student select one domino and say: *Show me how you count on to find the total.* Repeat using another domino. Listen to confirm if the strategy is used correctly, or whether the student counts all the dots from one. **C**

Working Mathematically

The processes related to the working mathematically outcomes are embedded in all *GO Maths* activities. The following pointers should help you assess the students' demonstration of these processes.

Questioning (WMES 1.1)	<i>Listen</i> to the questions students pose as they try to work out the addition combinations of ten. Do they look for a pattern?
Applying Strategies (WMES 1.2)	<i>Observe</i> the strategies students use to add 1 or 2. Do they count on or count from one?
Communicating (WMES 1.3)	<i>Note</i> the language students use to explain the strategies they are using. Are their explanations clear and logical?
Reasoning (WMES 1.4)	<i>Listen</i> as students explain why turnaround facts give the same total.
Reflecting (WMES 1.5)	<i>Listen</i> as students explain why it is helpful to understand the turnaround idea.

Recording

Content

Record achievement of the content indicators in the box(es) for this unit alongside the relevant outcome(s) in the Progress Record. This can be found on page xii of the Introduction to the teacher sourcebook. Alternatively, enter results into the *GO Chart Electronic Progress Record*.

Early Stage 1					
NES 1.2	9	15	20	21	28

Intervention

For students who need extra assistance, revisit the relevant parts of the unit.

UNIT 28

Learning Centres

Turn It Around A B

Preparation

You will need a supply of connecting cubes of different colours, two regular dice and some paper for each pair of students.

Activity

Have the students work in pairs. They take turns to roll the dice, then connect cubes of one colour to make the number shown on one of the dice and cubes of another colour to make the number shown on the other die. They then join the two cube sticks to show and write an addition fact in this form: $_ \text{ add } _ = _$. They then flip the cube stick over to show and write the turnaround fact.

Note: If a student rolls two of the same number on the dice they have another turn. The first student to show three totals greater than six wins.

Look for: Demonstration of turnaround facts with concrete materials and accurate recording of turnaround facts

Deal the Dominoes C

Preparation

You will need (for each pair of students) the Number-Facts dominoes (make a copy of page T-29 of the *GO Maths* student journal or use Blackline Master 36) cut into cards in an envelope, a marker and a sheet of paper.

Activity

Have the students work in pairs. They take turns selecting a domino from the envelope and reading the number fact. Both students then count on and write the fact and total on their paper. They continue until they have written six facts.

Listen for: Accurate counting on for the addition facts

Look for: Correct recording of addition facts

Jump Some More C

Preparation

You will need a copy of the number track of 1 to 15 (use Blackline Master 66), a small toy animal token for each student and two cubes R for each pair of students. One cube has each of the following on two of the faces: 'jump 1', 'jump 2' and 'jump 3'; the other shows the numerals from 7 to 12.

Activity

In pairs each student takes turns rolling both cubes. The number from 7 to 12 tells the student where to place their animal token on the number track. The other cube tells them how many jumps to make along the track. The students make their animal jump according to the cubes and say the matching number fact.

Save: Two cubes for 28.5

Number-Fact Fun Game C

Preparation

You will need two sets of number fact cards (use Blackline Master 75). You also need two boxes. Place the count-on cards in one box and the numeral cards in the other box.

Activity

The students can work either in pairs or individually. The first student takes a numeral card and the second takes a count-on card. The students place their cards on a table. The first student reads the cards and says the number fact, counts on and says the total. The students reverse roles and continue until all of the count-on cards are used.

Look for: Cooperation in working in pairs

Listen for: Accurate counting-on or quick recall of number facts

Match the Turnarounds A B

Preparation

You will need a set of cards made from Blackline Masters 76 and 77. Place them in a container and have a marker and sheet of paper for each student.

Activity

The students work in pairs to read the number facts and match the turnaround facts. They select six of the facts and write them and the total on their sheet of paper.

Look for: Accurate matching of the turnaround facts and writing the correct total

Two More Dollars C

Preparation

You will need a blank cube R with the following written on the faces: 8, 9, 10, 11, 12, 13. You will also need a card with 'add \$2' written on for each pair of students.

Activity

The students can work in pairs or individually. The first student rolls the cube and places the 'add \$2' card next to it. The second student adds 2 to the number rolled and says the total. They reverse roles and continue for ten rolls each.

Listen for: Accurate totals

28.1

Reviewing Turnaround Facts

Materials

- Domino dot cards for 1 to 6 from Blackline Master 6
- 'Groups of Two' Arrangement cards for 1 to 6 from Blackline Master 26
- Number picture cards for 1 to 6 from Blackline Master 5 (Note: All these cards will be used throughout the unit.)
- Connecting cubes — 10 of two different colours for each pair of students

In this lesson, students use connecting cubes to review the turnaround idea for addition.

Daily Number Sense

Mix up all the cards and place them facedown on the floor. Have the students sit close so they can see the cards easily. Say: *We will turn over two cards. Decide if the numbers on both cards are **equal**. If you think they are equal, point to your head.* Invite a student to say whether the cards are equal or not. Repeat the comparing at least ten times.

Activity

1. Ask three girls to come to the front of the class and stand in a row. Invite four boys to stand in a row on the audience's right of the girls. Write **3 add 4 = 7** on the board.
2. Direct the girls to move to the audience's right of the boys. Ask the class how this should be written. Write **4 add 3 = 7** under the previous statement. Remind students of the expression 'turnaround fact'.
3. Repeat Steps 1 and 2 with different numbers of girls and boys.
4. Join 5 red and 3 yellow connecting cubes and show the cube stick horizontally. Ask the class what number fact the stick shows and how it should be written. Write **5 add 3 = 8** on the board. Say: *Let's turn it around.* Turn the cube stick and write **3 add 5 = 8** on the board.
5. Give each pair of students ten connecting cubes of one colour and ten of another colour. Have them make addition combinations to 10 and demonstrate the turnaround fact by turning their cube sticks around. Record some of their combinations on the board.

Reflection

On the board, write this several times: **__ add __ = 10**. Ask pairs of students to suggest two numbers that add to ten. They can demonstrate by using connecting cubes in two different colours. Complete one of the statements on the board. Repeat using other combinations suggested by the students.

Counting by Twos to 10

28.2

In this lesson, students count in twos to explore skip counting and adding on two.

Daily Number Sense

Repeat the Daily Number Sense discussion from the previous lesson.

Materials

- GO Maths student journal, page 88
- Number cards from the previous lesson

Activity

1. Have the students sit in a horseshoe shape. Say: *Let's find out how many children are in our class. We'll count off one by one.* Turn to a student at one end of the horseshoe and say: *(Marion) is the number one. Are you ready? Let's count the class.* Help the students count off one at a time to find out the number of students in the class.
2. Start another count off by counting in twos with the even number students standing as they say their number. Repeat, and this time have all the odd number students stand as they say their number.
3. Direct the students to line up evenly in two rows. If there is an uneven number of students, the extra student becomes the counter. Count again with everyone counting aloud in twos.
4. Have the students work independently to complete page 88 (📖❤️) of the GO Maths student journal.

Reflection

1. Ask each student to place a sheet of paper on his or her closed GO Maths student journal and turn the book and paper horizontally. Say: *I will count very slowly and you write the numbers and whisper the number as you write. Listen carefully to count and write the numbers in a row.* Then say: *Write a little 'one', write a big 'two', write a little 'three', write a big 'four' ... (continue to ten).*
2. Repeat, this time counting by twos backwards from ten, while the students write and whisper the numbers.

28.3

Counting by Twos to 20

Materials

- *GO Maths* student journal, page 89
- Number cards from the previous lesson plus additional cards showing 7 to 10 from Blackline Masters 8 and 12
- 5 number name cards: 'two', 'four', 'six', 'eight' and 'ten'
- Tennis ball

In this lesson, students count in twos to twenty.

Daily Number Sense

Repeat the Daily Number Sense discussion from the previous lesson using the number cards for 1 to 10.

Activity

1. Have the students sit in a horseshoe shape. Invite five students to come to the front. Say: *Let's count their eyes. Count in twos. Begin: two, four, six, eight, ten.* Repeat with four students and counting arms, then six students and counting feet.
2. Say: *We will count and clap as we count in twos. Count with me.* Have the students whisper the odd numbers then say the even numbers with a clap. Repeat the whispering and clapping to count by twos.
3. Next, just count by twos and soft clap each time. Count from two to ten in twos.
4. Give a number name card to five students. Ask those students to come to the front and put themselves in order. Invite everyone to count in twos as another student points to each card.
5. Direct the class to sit back in the circle again. Say: *We will count by twos. When the ball is rolled to you, say the next counting-by-twos number. Then roll the ball to someone who hasn't had a turn.* Roll the ball slowly to the first student and say: *Two.* Ask the students to continue the rolling and counting by twos, counting up as far as possible.
6. Have the students work independently to complete page 89   of the *GO Maths* student journal.

Reflection

Repeat Step 5 of the activity, beginning with the number one so odd numbers are explored.

Reviewing the Count-On-2 Number-Fact Strategy

28.4

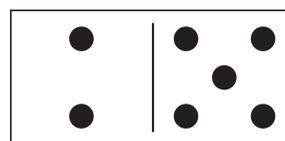
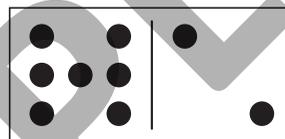
In this lesson, students use concrete and pictorial resources to practise the count-on-2 number-fact strategy.

Daily Number Sense

Repeat the Daily Number Sense discussion from the previous lesson. Look for cards that are **not equal**.

Activity

1. Have the students sit in a horseshoe shape. Show them one of the domino cards, holding it so the greater number of dots is on the students' left. Say: *Let's look at this dot picture of a count-on-2 number fact. We don't need to count all the dots to find the total. We can count on two. (Seven) and (two) dots is seven* (point to the group of seven dots), *eight* (point to one dot of the two dots), *nine* (point to the other dot). *Seven add two is nine*. Invite individual students to select a domino and demonstrate the strategy, pointing to the dots as everyone counts on two.
2. Repeat with the count-on strategy cards from the Box of Facts. Have different students model the strategy, with the class saying the number, counting on two and saying the total.
3. Use the cards again and hold some of them so the two dots are on the students' left (the turnaround fact). Encourage the students to discuss how they would count on. Remind the students of the 'Think Big, Count Small' idea from Unit 15. Reinforce by saying: *I think it is easier to start with the greater number and count on two*. For example: *Five and count on two. Five, six, seven. Two add five is seven.*



Materials

- GO Maths student journal, Tear Out 29, page T-29
- Number cards from the previous lesson
- Count-on-1 and -2 domino cards from a Double-Nine Dot Dominoes  set, or use the cards made in 15.3
- Count-on strategy cards from The Box of Facts: Addition 
- Scissors for each student

Consolidation

Write $__ \text{ add } 2 = __$ on the board. Ask students to suggest numbers that would complete the statement giving an answer of ten or less, and then ask students to supply the turnaround fact. Record their suggestions on the board. Some students might want to use numbers beyond ten.

Reflection

1. Invite individual students to show a domino card and have the class say and use the count-on strategy.
2. Have each student remove Tear Out 29 (page T-29,   ) of their GO Maths student journal. The students cut out the dominoes and take them home to practise their count-on facts.

28.5

Using a Number Track to Count on 2 to Fifteen

Materials

- *GO Maths* student journal, pages 90 and 91
- Number cards from 28.3
- Counters  and a jar to put them in
- Floor number track of 1 to 15
- 2 cubes  from the 'Jump Some More' learning centre activity
- Number track of 1 to 15 from Blackline Master 66 and a small animal counter for each student

Optional

- Puppet

In this lesson, students use a number track to act out jumping on two and counting on two to fifteen.

Daily Number Sense

Mix up all of the cards and place them facedown on the floor. Say: *Today when we turn over cards that are equal, we will place a counter in the jar. And remember to point at your head if you think the cards are equal.* Invite a student to place a counter in the jar each time there are two equal cards. When finished, count the number of counters in the jar.

Activity

1. Place the floor number track so everyone can easily see it. Use the two cubes from the 'Jump Some More' learning centre activity. Invite two students to each roll one of the cubes. Have another student be the jumping animal and act out the story of the jumps. Repeat several more times with different students participating. You could also use a puppet to act out number-fact stories.
2. Give each student a number track from Blackline Master 66 and a small animal counter. The two cubes are rolled again and each student acts out the number fact count-on story. Repeat several times.
3. Have the students work independently to complete page 90  ★) of the *GO Maths* journal.

Reflection

Work together with the whole class on page 91  ★) of the *GO Maths* student journal.

UNIT 28 Materials and Resources

28.1

Reviewing Turnaround Facts

Materials

- Domino dot cards for 1 to 6 from Blackline Master 6
- 'Groups of Two' Arrangement cards for 1 to 6 from Blackline Master 26
- Number picture cards for 1 to 6 from Blackline Master 5 (*Note: All these cards will be used throughout the unit.*)
- Connecting cubes — 10 of two different colours for each pair of students

28.2

Counting by Twos to 10

Materials

- *GO Maths* student journal, page 88
- Number cards from the previous lesson

28.3

Counting by Twos to 20

Materials

- *GO Maths* student journal, page 89
- Number cards from the previous lesson plus additional cards showing 7 to 10 from Blackline Masters 8 and 12
- 5 number name cards: 'two', 'four', 'six', 'eight' and 'ten'
- Tennis ball

28.4

Reviewing the Count-On-2 Number-Fact Strategy

Materials

- *GO Maths* student journal, Tear Out 29, page T-29
- Number cards from the previous lesson
- Count-on-1 and -2 domino cards from a Double-Nine Dot Dominoes  set
- Count-on strategy cards from the Box of Facts: Addition 
- Scissors for each student

28.5

Using a Number Track to Count On 2 to Fifteen

Materials

- *GO Maths* student journal, pages 90 and 91
- Number cards from 28.3
- Counters  and a jar to put them in
- Floor number track of 1 to 15
- 2 cubes  from the 'Jump Some More' learning centre activity
- Number track of 1 to 15 from Blackline Master 66 and a small animal counter for each student

Optional

- Puppet