E X P L O R A T I O N S

Activity 4

Skip Counting— 2, 4, 6, 8, Who Do We Appreciate?

Objective

♦ To explore skip counting to complete patterns

♦ To develop multiplication

Materials

♦ TI–73 Calculator

Teacher Notes

Introduction

How often have we heard that chant? Can we exploit the idea of skip counting to enhance student understanding of multiplication and pattern completion? This activity will show how you might foster those skills.

This activity provides students the opportunity to construct patterns using the Number Line Application.

Procedure

1. Demonstrate how to create the pattern 2, 4, 6, 8, 10, … using the Number Line Application.

To start the application, press [APPS] and press [⯆] to select NUMLINE. Once the App has started, select 2:Fraction Line.

To view the pattern, change the window values to match those seen at the right. Press [WINDOW], change **Min** to **0**, **Max** to **20**, **Start** to **0** and **Step** to **2**. Also, select **Dec** and press [⯆] to view the window for the Lower Indicator. Select **Off** for the Lower Indicator.

```
APPLICATIONS
1:Link…
2:CBL/CBR
3:NUMLINE
```

```
NUM/FRAC LINE:
1:Number Line
2:Fraction Line
3:Quit
```

```
WINDOW
 Min=0
 Max=20
 Dec Frac
Upper Indicator
 Start=0
 Step=2
↓Dec Frac % Off
```

```
↑WINDOW
Lower Indicator
 Start=0
 Step=.25
 Dec Frac % Off
```

Press GRAPH to see the number line. Now press ▶ a few times to see the next terms in the sequence. You should see the indicator move from 0 to 2, then to 4, and finally 6. The value of each step is 2, matching the value entered into the window settings.
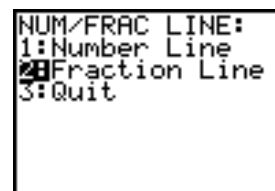
2. Distribute the Student Activity pages with the problem statement. Have students work in pairs using one calculator between them.
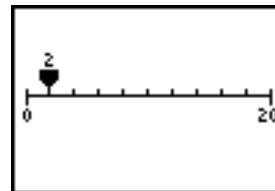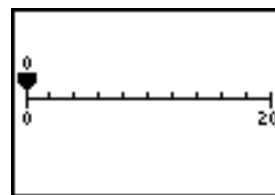
3. Have students access the Number Line application by pressing APPS and pressing ▼ to select the NUMLINE application.
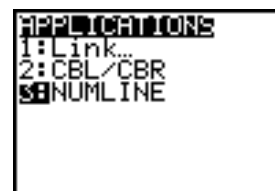
Press ENTER twice to get to the NUM/FRAC LINE menu and select 2: Fraction Line.

In order for students to view the pattern change they must change the calculators' window values to match those seen at the right. Press WINDOW, change the **Min** to **0**, **Max** to **30**, **Start** to **0** and **Step** to **4**.
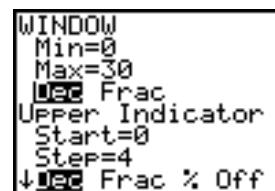
Also select **Dec** and press ▼ to view the window for the Lower Indicator. Select **Off** for the Lower Indicator.

The indicator will start at 0 and will jump by 4 each time ▶ is pressed. Eventually the value will exceed 30 but the window will automatically adjust to show the correct location for the indicator.
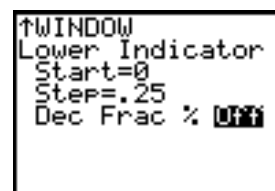
4. Students will first complete the multiplication portion, then the pattern completion part of the activity.

Answer Key

4.   0, 4, 8, 12, 16, 20, 24, 28, 32, 36.

5.   **a.**   0, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30   Start = 0 Step = 3

  b.   0, 6, 12, 18, 24, 30, 36, 42, 48, 54, 60   Start = 0 Step = 6

  c.   0, 7, 14, 21, 28, 35, 42, 49, 56, 63, 70   Start = 0 Step = 7

  d.   0, 9, 18, 27, 36, 45, 54, 63, 72, 81, 90   Start = 0 Step = 9

  e.   0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100   Start = 0 Step = 10

  f.   0, 13, 26, 39, 52, 65, 78, 91, 104, 117, 130   Start = 0 Step = 13

7.   1, 6, 11, 16, 21, 26, 31, 36, 41, 46.

8.   **a.**   4, 9, 14, 19, 24, 29, 34, 39, 44, 49   Start = 4 Step = 5

  b.   5, 12, 19, 26, 33, 40, 47, 54, 61, 68   Start = 5 Step = 7

  c.   7, 10, 13, 16, 19, 22, 25, 28, 31, 34   Start = 7 Step = 3

  d.   9, 12, 15, 18, 21, 24, 27, 30, 33, 36   Start = 9 Step = 3

  e.   10, 21, 32, 43, 54, 65, 76, 87, 98, 109   Start = 10 Step = 11

  f.   13, 25, 37, 49, 61, 73, 85, 97, 109, 121   Start = 13 Step = 12

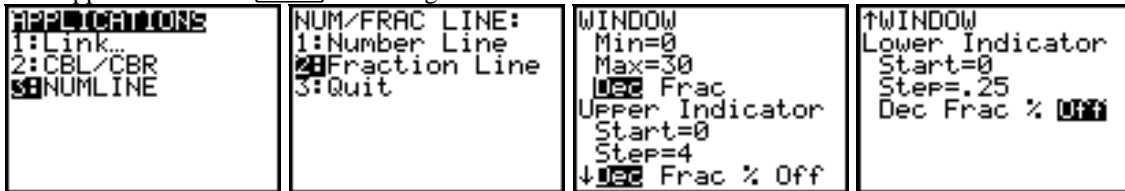**9.**   Answers will vary.

10. 161.

Activity 4

Skip Counting—2, 4, 6, 8, Who Do We Appreciate?

Objective: *In this activity, you will investigate how to complete patterns using the number line. You will use the Number Line application on the TI-73 calculator.*

We have all heard that rhyme. Some have used that to memorize multiplication facts. What else can we learn from the rhyme?

1. Access the Number Line application by pressing APPS and pressing ▼ to select the NUMLINE application. Press ENTER twice to get to the NUM/FRAC LINE menu and select 2: Fraction Line.

```
APPLICATIONS
1:Link…
2:CBL/CBR
3:NUMLINE
```
```
NUM/FRAC LINE:
1:Number Line
2:Fraction Line
3:Quit
```
```
WINDOW
 Min=0
 Max=30
 Dec Frac
Upper Indicator
 Start=0
 Step=4
↓Dec Frac % Off
```
```
↑WINDOW
Lower Indicator
 Start=0
 Step=.25
 Dec Frac % Off
```

2. In order to view the pattern change you must change the calculator's window values to match those seen above. Press WINDOW, change **Min** to **0**, **Max** to **30**, **Start** to **0** and **Step** to **4**. Also select **Dec** and press ▼ to view the window for the Lower Indicator. Select **Off** for the Lower Indicator

3. Press GRAPH and then press ▶. Notice that every time ▶ is pressed the indicator increases by 4. Eventually the value will exceed 30 but the window will automatically adjust to show to correct location for the indicator.
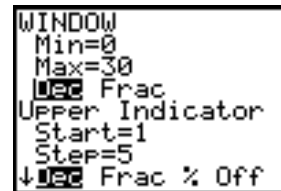

4. Record ten of the values:

0, 4, ___, ___, ___, ___, ___, ___, ___, ___

5. Use the Number Line Application to complete these patterns.

    a.   0, 3, 6, 9, ___, ___, ___, ___, ___, ___, ___

    b.   0, 6, 12, 18, ___, ___, ___, ___, ___, ___, ___

    c.   0, 7, 14, 21, ___, ___, ___, ___, ___, ___, ___

    d.   0, 9, 18, 27, ___, ___, ___, ___, ___, ___, ___

    e.   0, 10, 20, 30, ___, ___, ___, ___, ___, ___, ___

    f.   0, 13, 26, 39, ___, ___, ___, ___, ___, ___, ___

6. Some patterns are not all multiples of the first value. For instance, the sequence 1, 6, 11, 16, 21, 26, … starts with 1 and increases by 5 each term. Adjust your window to **Start** = **1** and **Step** = **5**. Leave the lower indicator off. Remember to press GRAPH to view the window.

```
WINDOW
 Min=0
 Max=30
 Dec Frac
Upper Indicator
 Start=1
 Step=5
↓Dec Frac % Off
```

7. Record ten of the values:

1, 6, ___, ___, ___, ___, ___, ___, ___, ___

8. Use the Number Line Application to complete these patterns.

    a.   4, 9, 14, ___, ___, ___, ___, ___, ___, ___   Start =___   Step =___

    b.   5, 12, 19, ___, ___, ___, ___, ___, ___, ___   Start =___   Step =___

    c.   7, 10, 13, ___, ___, ___, ___, ___, ___, ___   Start =___   Step =___

    d.   9, 12, 15, ___, ___, ___, ___, ___, ___, ___   Start =___   Step =___

  e. 10, 21, 32, ___, ___, ___, ___, ___, ___, ___   Start =___   Step =___

  f. 13, 25, 37, ___, ___, ___, ___, ___, ___, ___   Start =___   Step =___

9. Create a number pattern like those above. Be prepared to share it with your classmates.

  ___, ___, ___, ___, ___, ___, ___, ___, ___, ___   Start =___   Step =___

10. Predict the 20th term in this pattern:
  1, 9, 17, 25, ?, …