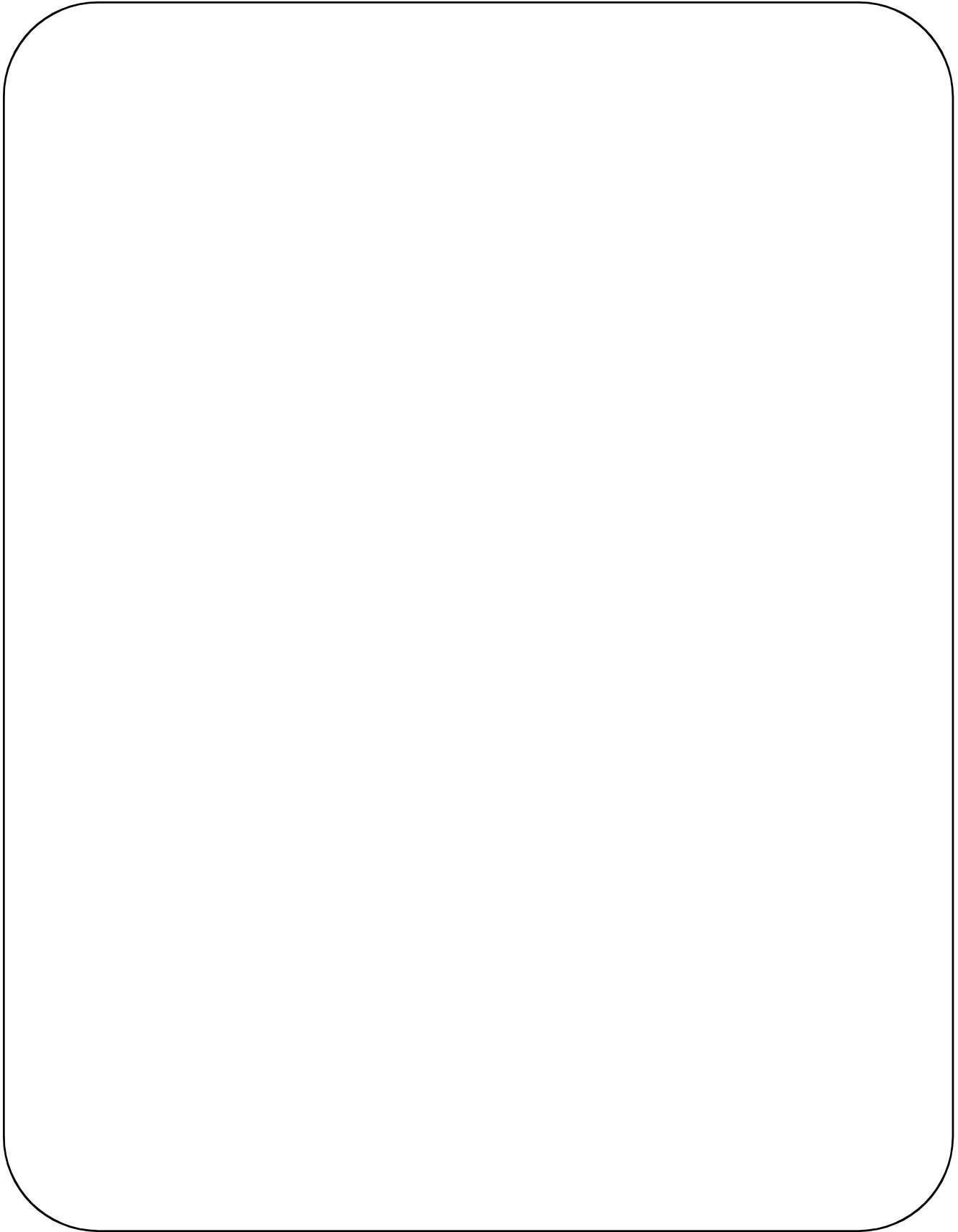


# **Number Sense and Numeration**



# The Ontario Curriculum: Mathematics

## Challenge P2

T

### I Know My Numbers To 10

#### Expectations

- 1m1** understand whole numbers by exploring number relationships using concrete materials (e.g., demonstrate with blocks that 7 is one less than 8 or two more than 5);
- 1m2** understand numerals, ordinals, and the corresponding words, and demonstrate the ability to print them;
- 1m11** read and print numerals from 0 to 100;
- 1m12** read and print number words to ten;
- 1m14** demonstrate the one-to-one correspondence between number and objects when counting;
- 1m19** investigate number meanings (e.g., the concept of 5);

#### Teaching Strategies

(This activity fits well in September to teach number meanings)

1. Review (teach) *instruction* words, such as
  - circle
  - colour
  - print.
2. Review numbers and number words to 10.
3. Give each student manipulatives to use in showing various numbers to 10; *i.e.*, *show me a 5, ...*

#### Suggested Resources

- crayons
- glue
- *Mathville Kidway - Baseball Count, Snack hack*
- Broderbund. **James Discovers Math. Fruit Market Activity.**
- Number Books to 10, *Appendix 4*
- pencil
- various manipulatives
- Mark, E. **Millie's Math House** a) Cookie Factory, b) Number Machine, c) Build A Bug

#### Catholic School Commentary

- (2) **An effective communicator** who speaks, writes and listens honestly and sensitively, responding critically in light of gospel values.
  - (b) Reads, understands and uses written materials effectively.
  - (3) **A reflective, creative and holistic thinker** who solves problems and makes responsible decisions with an informed moral conscience for the common good.
  - (c) Thinks reflectively and creatively to evaluate situations and solve problems.
- (OCSGE). 1998.

#### Assessment

1. Check accuracy of the Number Book.
2. To ensure understanding of the concept, check student work as they are completing it. You may wish to record the results using a checklist.



# Number Sense and Numeration

## Challenge P2

S

### I Know My Numbers To 10

#### Materials

- crayons
- glue
- Number Books to 10
- pencil
- scissors

#### Procedures

1. Following the teacher's instructions, complete your Number Book to 10.

#### Further Challenges

- Add pages to the back of your Number Book, on which you can create numbers from 10 to 20. Draw in objects to match your numbers.

*Appendix #4*

's

---

**Number Book**

**From**

**One to Ten**



# Number Sense and Numeration

## *Appendix #4 a*

1 - one

10 - ten

Here is \_\_\_\_\_

Here are \_\_\_\_\_

*Appendix #4 b*

9 - nine

2 - two

Here are \_\_\_\_\_

Here are \_\_\_\_\_



# Number Sense and Numeration

## *Appendix #4 c*

**3 - three**

**8 - eight**

Here are \_\_\_\_\_

Here are \_\_\_\_\_

*Appendix #4 d*

7 - seven

4 - four

Here are \_\_\_\_\_

Here are \_\_\_\_\_



# Number Sense and Numeration

## *Appendix #4 e*

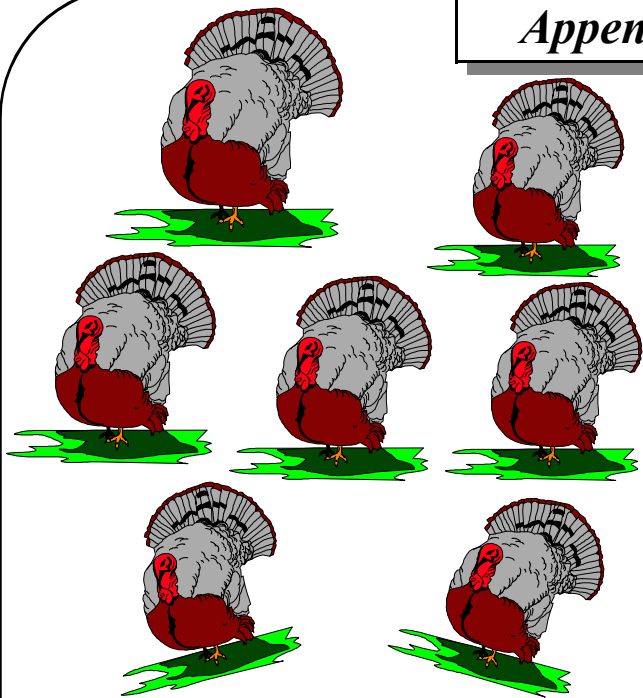
**5 - five**

**6 - six**

Here are \_\_\_\_\_

Here are \_\_\_\_\_

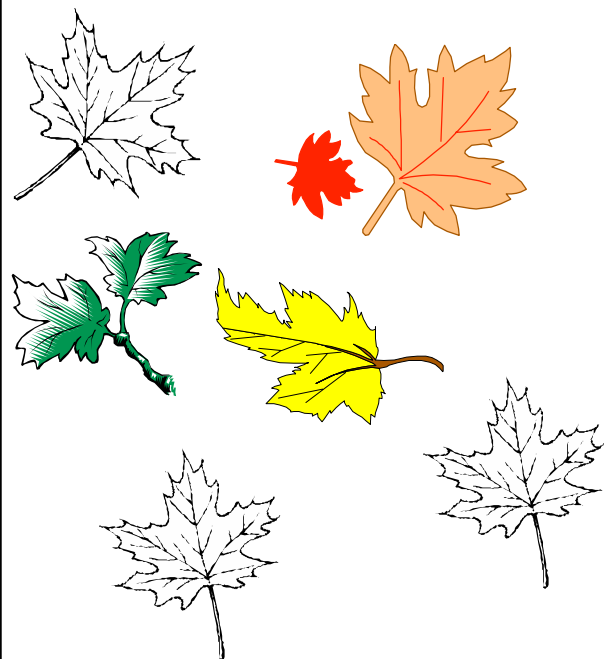
Appendix #4 f



turkeys



pumpkins



leaves

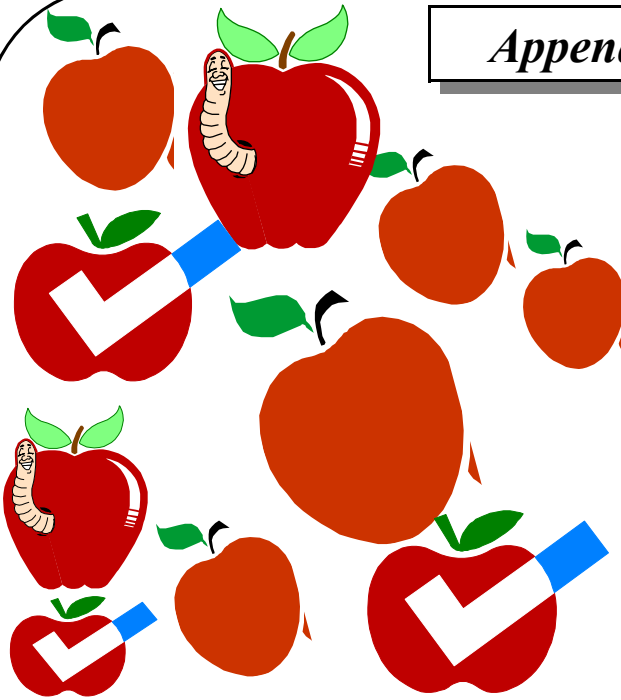


horn of plenty

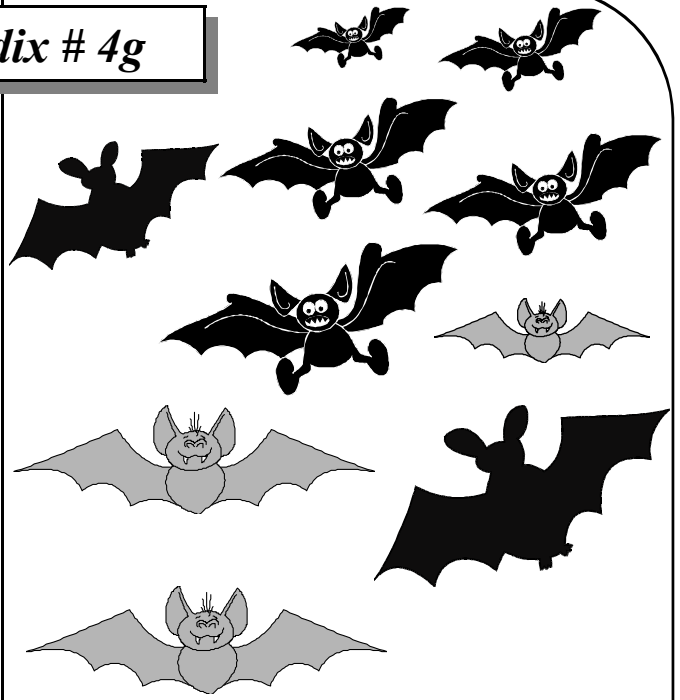


# Number Sense and Numeration

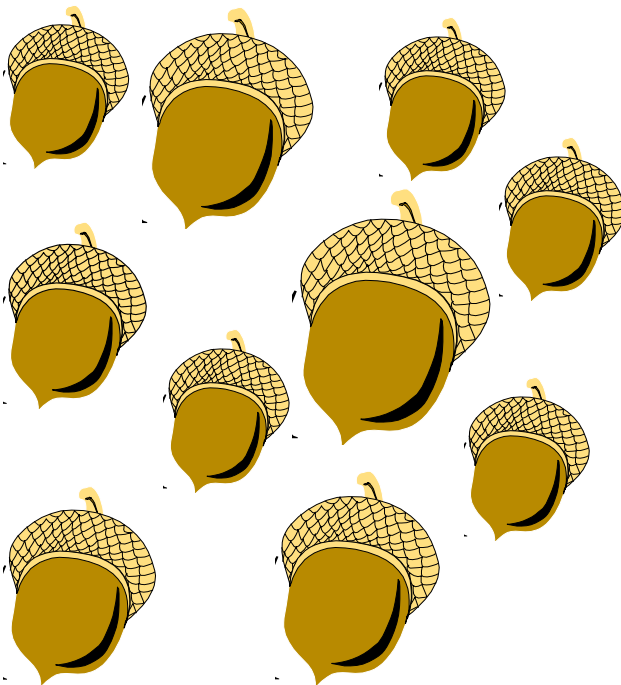
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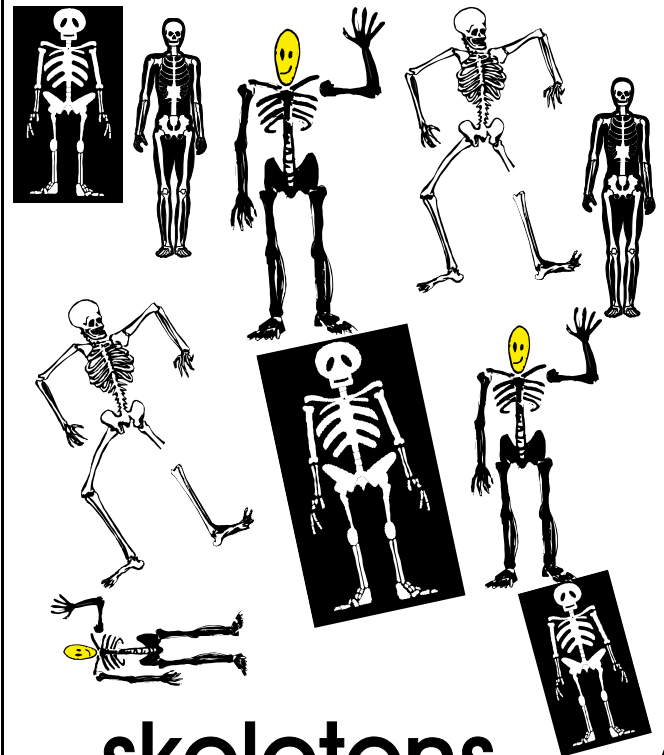
apples



bats



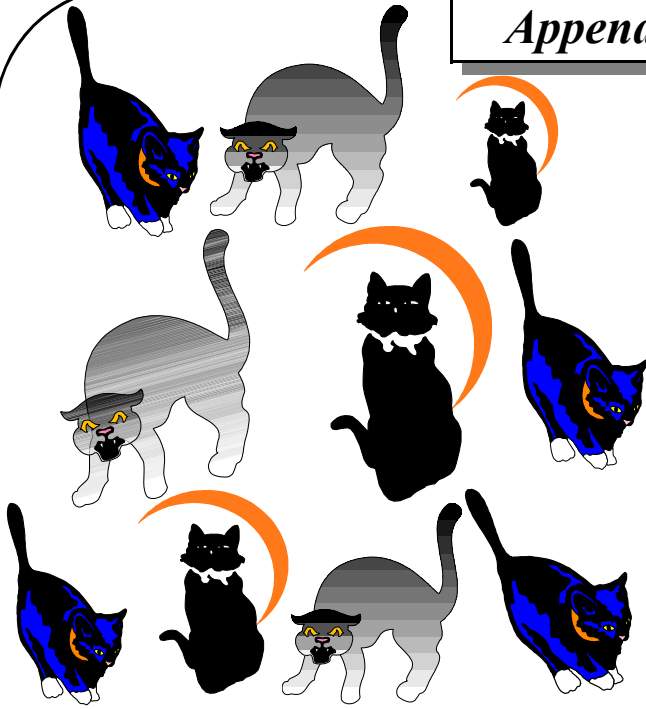
acorns



skeletons

# The Ontario Curriculum: Mathematics

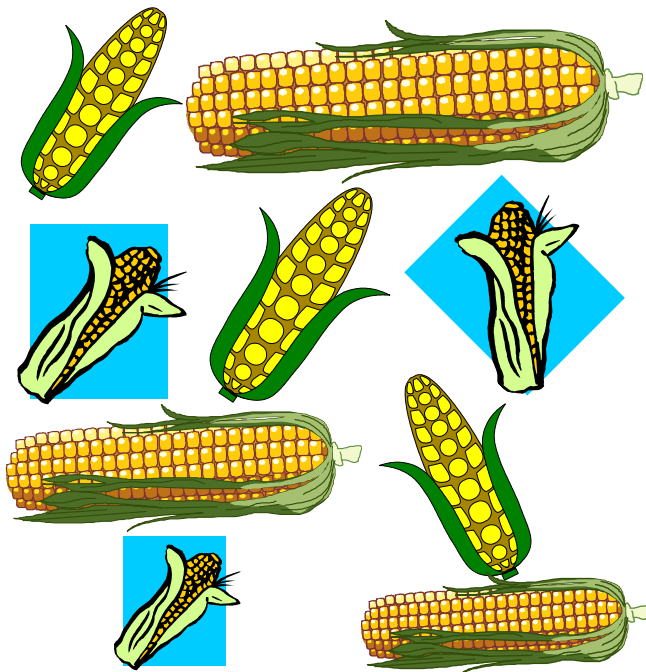
## Appendix # 4 g



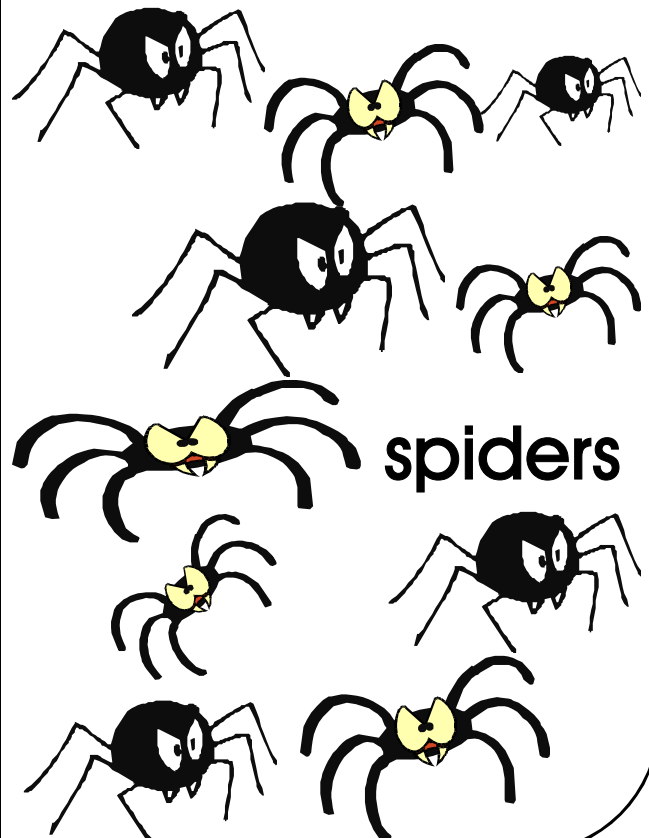
**cats**



**witches**



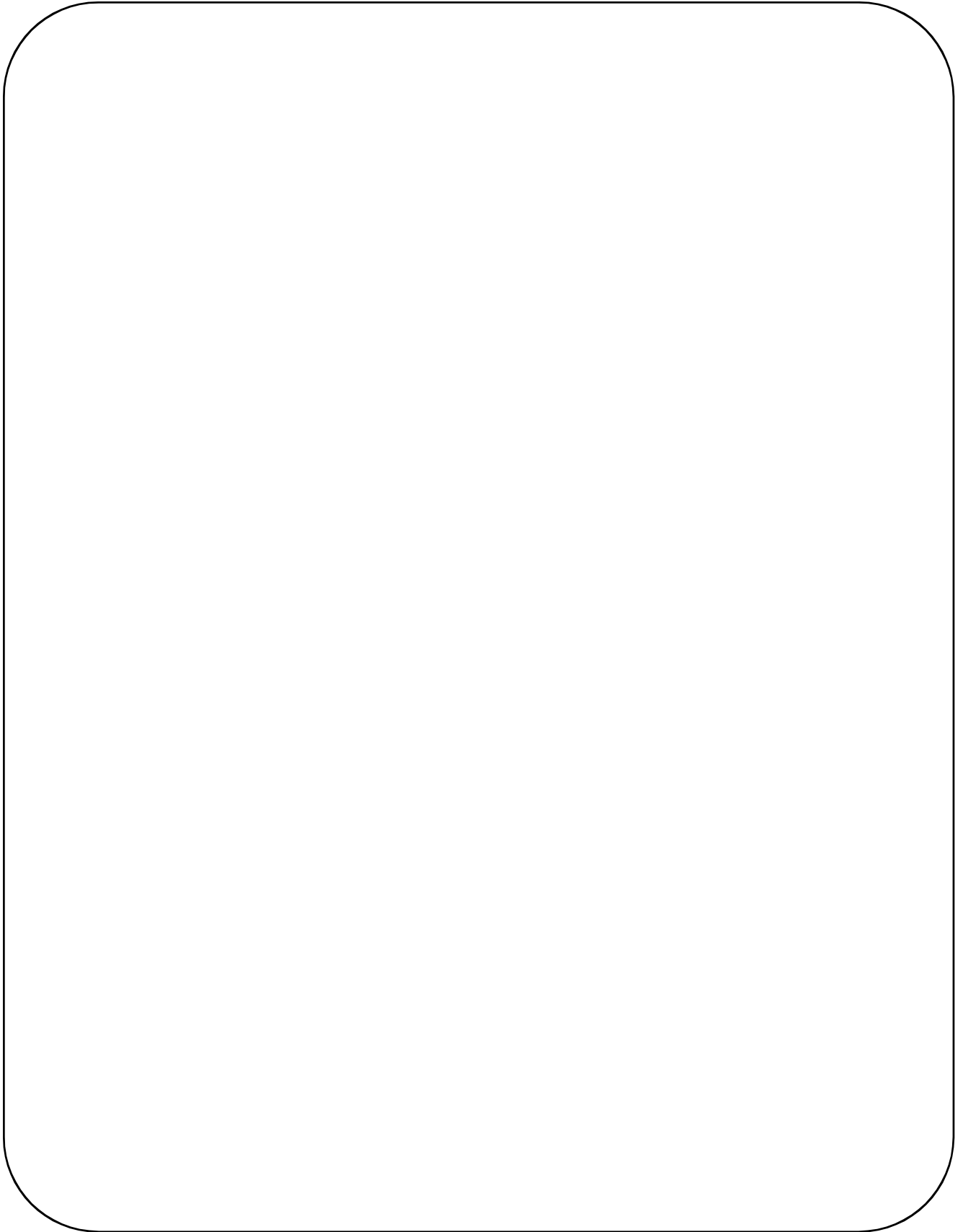
**corn**



**spiders**



# **Number Sense and Numeration**



# The Ontario Curriculum: Mathematics

## Challenge P3

T

### A Number Is A Number No Matter How It Looks!

#### Expectations

- 1m1** understand whole numbers by exploring number relationships using concrete materials (e.g., demonstrate with blocks that 7 is one less than 8 or two more than 5);
- 1m9** estimate quantity in everyday life (e.g., guess, then count how many beans are in the jar);
- 1m13** demonstrate the conservation of number (e.g., 5 counters still represent the number 5 whether they are close together or far apart);
- 1m14** demonstrate the one-to-one correspondence between number and objects when counting;

#### Teaching Strategies

1. Set up the overhead and screen.
2. Using cube-a-links, place four cubes on the overhead.
3. Using one-to-one correspondence, as a group, count the cubes out loud.
4. Move the cubes so that there is more/less space between them (different formation). How many there are now?
5. Repeat steps 3 and 4, using different numbers between 2 and 10.
6. Change the size of the cubes. Repeat the process outlined above.
7. Go back and forth between two different size cubes. Ask lots of questions in order to ensure understanding of *the conservation of number*.
8. Introduce the file folder game.
9. Before moving on to paper and pencil and conference-type assessment, let the students play the game for as long as needed for them to absorb the concept.

#### Suggested Resources

- ♦ *Appendix 5*
- ♦ Broderbund. **James Discovers Math. Fruit Market Activity.**
- ♦ centimetre cubes
- ♦ cube-a-links
- ♦ overhead projector
- ♦ screen

#### Catholic School Commentary

- (5) *A collaborative contributor* who finds meaning, dignity and vocation in work which respects the rights of all and contributes to the common good.
- (a) Works effectively as an interdependent team member.
- (e) Respects the rights, responsibilities and contributions of self and others.
- (g) Achieves excellence, originality, and integrity in one's own work and supports these qualities in the work of others. (OCSGE), 1998.

#### Assessment

- ♦ Complete pencil/paper activity to help ensure comprehension of the concept.
- ♦ Have a student –teacher conference to check on comprehension of the concept. Manipulate different size objects to provide a basis for the discussion. (*Appendix 5*)



# Number Sense and Numeration

## Challenge P3

S

### A Number Is A Number No Matter How It Looks!

#### Materials

- ◆ *Appendix # 6*, file folder game and the cards needed to play it.

#### Procedures

1. Open your file folder. Remove the cards.
2. Choose one card at a time. Place the card chosen under the correct number that matches the number of objects on the card.
3. Repeat the process until the cards are used up.
4. Compare the folder with that of a friend. Fix any errors.

#### Further Challenges

- ◆ Use the cards from your folder game, *Appendix 6*, to play *Old Maid* or *Memory Game* by matching two cards as you turn them over.

# The Ontario Curriculum: Mathematics

## Appendix #5

### Performance Assessment: Student-Teacher Conference

Name \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_

Ask the student to perform the following verbal activities. Encourage the students to try this without visual aids.

- |                         |                          |               |                          |                                       |                          |                         |
|-------------------------|--------------------------|---------------|--------------------------|---------------------------------------|--------------------------|-------------------------|
| 1. Count from 0 to 50.  | <input type="checkbox"/> | independently | <input type="checkbox"/> | with visual and/or teacher assistance | <input type="checkbox"/> | unable to complete task |
| 2. Count back from 20.  | <input type="checkbox"/> |               | <input type="checkbox"/> |                                       | <input type="checkbox"/> |                         |
| 3. Count from 30 to 50. | <input type="checkbox"/> |               | <input type="checkbox"/> |                                       | <input type="checkbox"/> |                         |
| 4. Count by 2's to 50.  | <input type="checkbox"/> |               | <input type="checkbox"/> |                                       | <input type="checkbox"/> |                         |
| 5. Count by 10's to 50. | <input type="checkbox"/> |               | <input type="checkbox"/> |                                       | <input type="checkbox"/> |                         |

Using number cards, have the students place the following sets in order:

- |                                   |                          |               |                          |                                       |                          |                         |
|-----------------------------------|--------------------------|---------------|--------------------------|---------------------------------------|--------------------------|-------------------------|
| 6. 29, 17, 31 (least to greatest) | <input type="checkbox"/> | independently | <input type="checkbox"/> | with visual and/or teacher assistance | <input type="checkbox"/> | unable to complete task |
| 7. 45, 25, 35 (greatest to least) | <input type="checkbox"/> |               | <input type="checkbox"/> |                                       | <input type="checkbox"/> |                         |
| 8. 33, 50, 47 (least to greatest) | <input type="checkbox"/> |               | <input type="checkbox"/> |                                       | <input type="checkbox"/> |                         |

### Assessment Rubric: Number Order

|                                                |                                                                    |                                                                                                    |                                                     |
|------------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| -completes counting tasks only with assistance | -completes counting tasks with some assistance (visual or teacher) | -accurately and independently completes counting tasks to 50                                       | -extends these skills beyond 50                     |
| -has limited understanding of number order     | -has some understanding of number order                            | -understands number order - least to greatest and greatest to least most of the time independently | -always orders numbers accurately and independently |

Observations:

Highest most consistent level of achievement \_\_\_\_\_

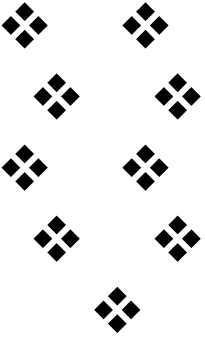
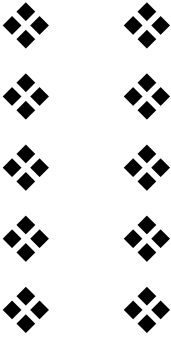


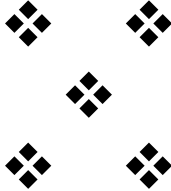
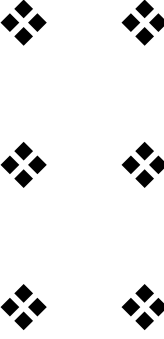
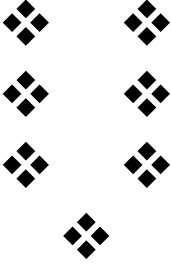
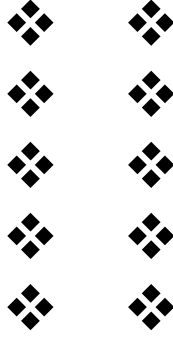


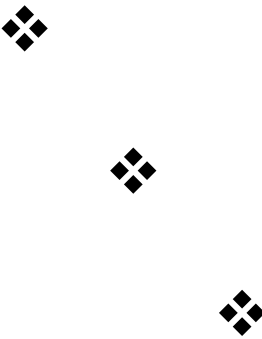
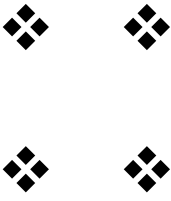


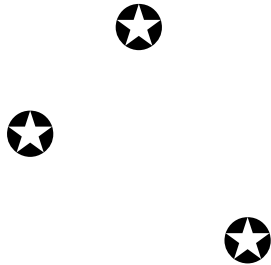

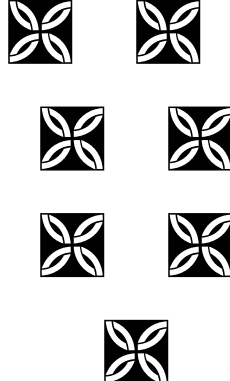
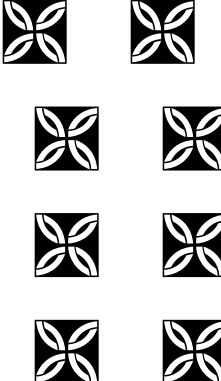
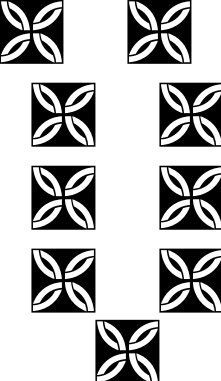
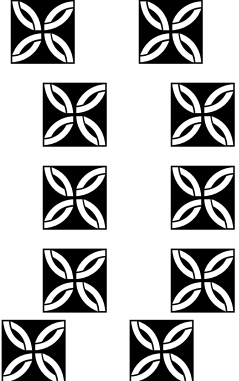


# File Folder Bag Game

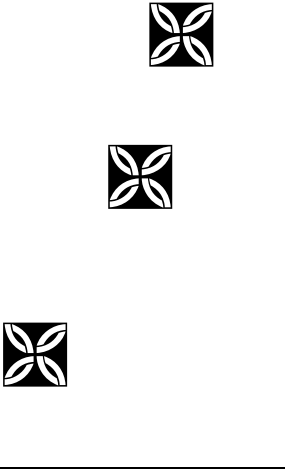
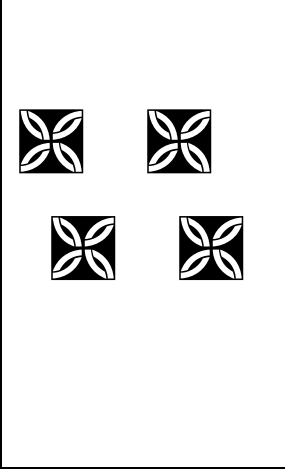
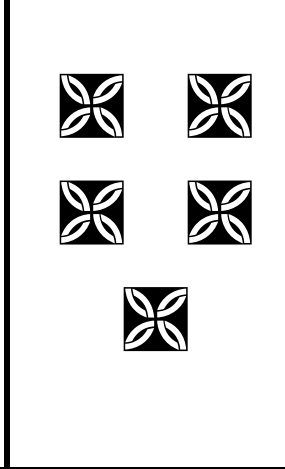
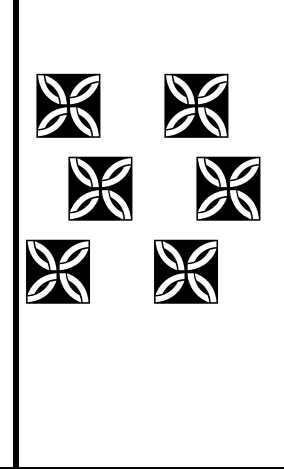
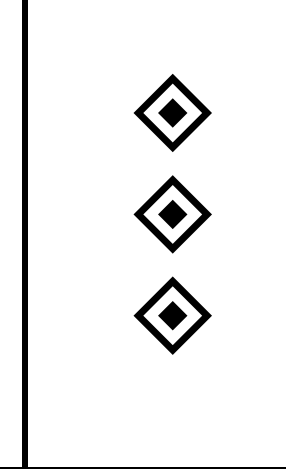
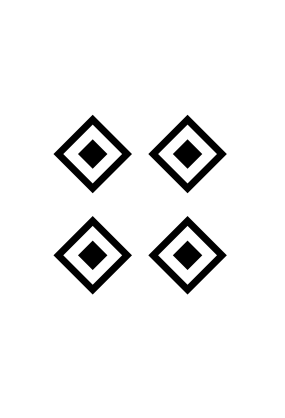
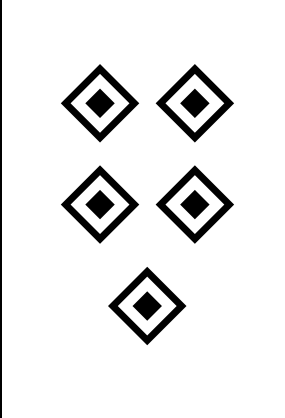
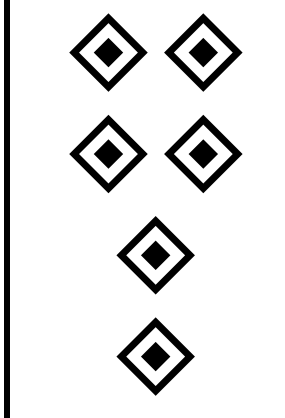
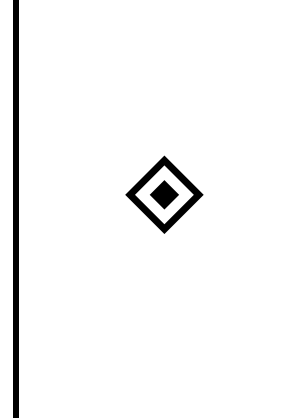
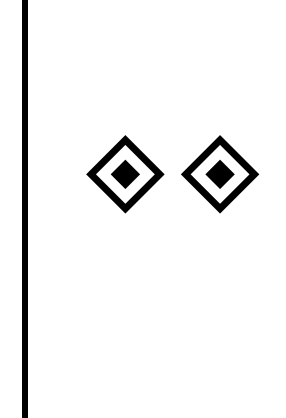
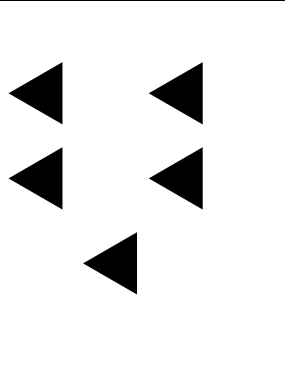
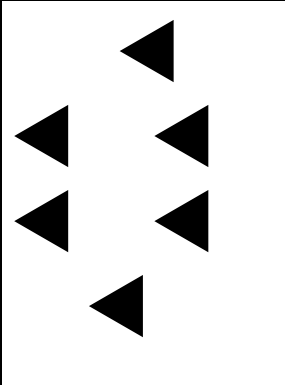
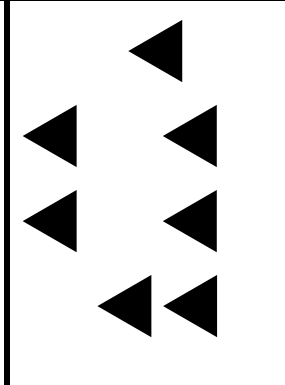
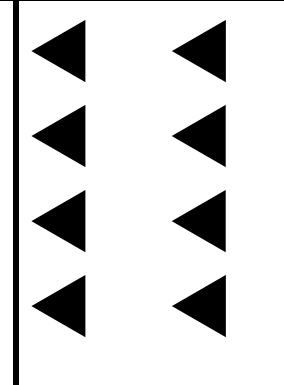
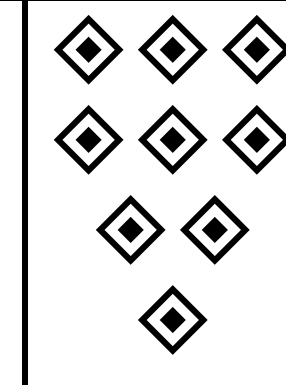
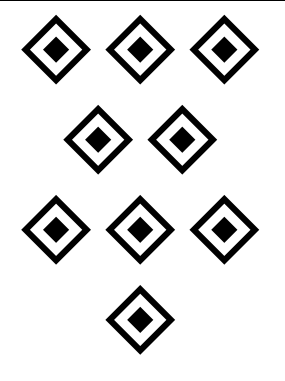
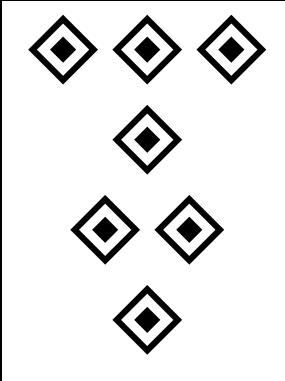
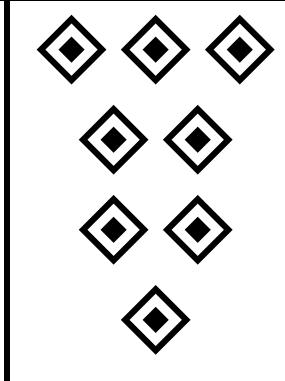
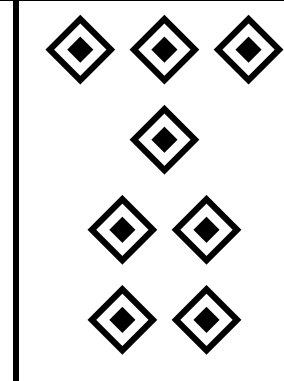
## *Instructions*

1. Shuffle all of the cards and place them face down.
2. Take turns choosing a card from the pile.
3. Count the objects, on the card which you have chosen. Place it under the appropriate number on the file folder.
4. Keep playing until you have placed 4 cards under one number (covered one column).

# Playing Cards

|                                                                                    |                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|   |    |    |   |    |
|  |   |   |   |   |
|  |  |  |             |  |
|  |  |  |  |  |

# Playing Cards

|                                                                                    |                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |    |    |
|   |   |   |   |   |
|  |  |  |  |  |
|  |  |  |  |                                                                                       |

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|   |   |   |   |   |
|   |   |   |   |   |
|   |   |   |   |   |
|   |   |   |   |   |

6

7

8

9

10

# The Ontario Curriculum: Mathematics

## Challenge P 4

T

### All In Order

#### Expectations

- 1m1** understand whole numbers by exploring number relationships using concrete materials (e.g., demonstrate with blocks that 7 is one less than 8 or two more than 5);
- 1m4** compare and order whole numbers using concrete materials and drawings to develop number meanings (e.g., to show place value, arrange 32 counters in groups of 3 tens and 2 ones);
- 1m11** read and print numerals from 0 to 100;
- 1m18** compare, order, and represent whole numbers to 50 using concrete materials and drawings;

#### Teaching Strategies

1. Choose some activities from *Counting — Activities and Strategies*, pp. 5-6, for reviewing counting and numbers to 50.
2. Use number cards to 50, *Appendix 7*, to review *ordering of numbers*. Begin at 10 and gradually work up to 50. Give each student one of the number cards. Without the pupils talking, have them order themselves according to the cards they hold.
3. Create a number line, without numbers, on adding machine tape. The students place number cards, in the correct order, on the tape.

#### Suggested Resources

- ♦ adding machine tape
- ♦ individual number cards to 50
- ♦ large class 100's chart
- ♦ large number cards
- ♦ ———. **Magic Garden**. IBM Computers.
- ♦ number lines
- ♦ numbers to 50 bingo
- ♦ *Ziploc* baggies

#### Catholic School Commentary

- (4) *A self-directed, responsible, lifelong learner* who develops and demonstrates their God-given potential.
  - (5) *A collaborative contributor* who finds meaning, dignity and vocation in work which respects the rights of all and contributes to the common good.
    - (a) Works effectively as an interdependent team member.
    - (e) Respects the rights, responsibilities and contributions of self and others. (OCSGE), 1998.
- ♦ **Luke 15: 1-7 - Parable of the Lost Sheep**

#### Assessment

- ♦ Student –teacher conference to determine whether or not students can recognize and order to numbers to 50. See *Performance Assessment: Student-Teacher Conference* form, p. 38.
- ♦ Check for accuracy of written work as the students complete *Appendices 8, 9 and 10*.



# Number Sense and Numeration

## Challenge P4

S

### All In Order

#### Materials

- ◆ *Appendices 8, 9 and 10*
- ◆ dot-to-dot to the number 50 activities (many commercial books have dot-to-dot pages which are reproducible by teachers)
- ◆ individual number cards to 50 (*Appendix 7*)
- ◆ large number cards
- ◆ ———. *Magic Garden*. IBM Computers.
- ◆ number lines
- ◆ Number Bingo
- ◆ *Ziploc* baggies

#### Procedures

1. Use the number cards, in your *baggie*, to order numbers from 1-50.
2. When you are finished, compare your work to your partner's. Fix any mistakes.
3. Pull 4 numbers out of your *baggie*. Have a friend order the numbers from smallest to largest. Now it's your turn.
4. Try the same activity as in number 3, but this time order the numbers from largest to smallest.
5. Now practice what you have learned by completing *Appendices 8, 9 and 10*.

#### Further Challenges

- ◆ Play Number Bingo
- ◆ Complete and colour a dot-to-dot activity with numbers to 50.

# The Ontario Curriculum: Mathematics

## Challenge P4

T

### All In Order (con't)

#### Expectations

- 1m1** understand whole numbers by exploring number relationships using concrete materials (e.g., demonstrate with blocks that 7 is one less than 8 or two more than 5);
- 1m4** compare and order whole numbers using concrete materials and drawings to develop number meanings (e.g., to show place value, arrange 32 counters in groups of 3 tens and 2 ones);
- 1m11** read and print numerals from 0 to 100;
- 1m18** compare, order, and represent whole numbers to 50 using concrete materials and drawings;

#### Teaching Strategies

4. Provide each student with number cards to 50, in a *baggie*. Have the pupils order the numbers, in groups of 10, from 1-50.
5. Review number recognition by playing *Find the Number*. Call out a number. The students will hold up the correct number from their ordered list.
6. Give the students 3 or 4 large numbers. Have them order the numbers from smallest to largest; *i.e.*,  $\boxed{31}$ ,  $\boxed{42}$ ,  $\boxed{48}$ , etc. Increase the number of cards as the pupils gain proficiency in ordering numbers.

#### Suggested Resources

- ◆ adding machine tape
- ◆ individual number cards to 50
- ◆ large class 100's chart
- ◆ large number cards
- ◆ ———. **Magic Garden**. IBM Computers.
- ◆ number lines
- ◆ numbers to 50 bingo
- ◆ *Ziploc* baggies

#### Catholic School Commentary

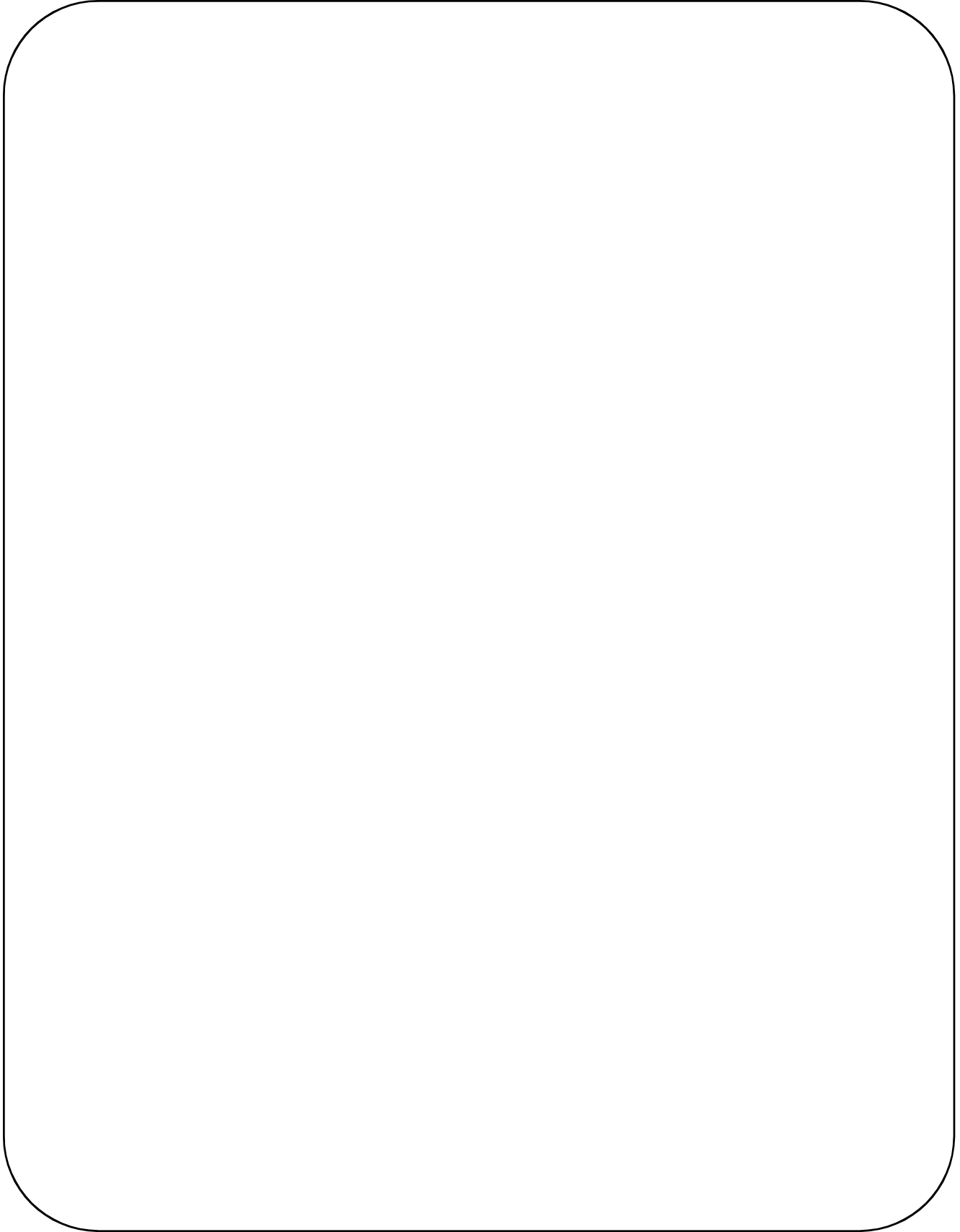
- (4) *A self-directed, responsible, lifelong learner* who develops and demonstrates their God-given potential.
  - (5) *A collaborative contributor* who finds meaning, dignity and vocation in work which respects the rights of all and contributes to the common good.
    - (a) Works effectively as an interdependent team member.
    - (e) Respects the rights, responsibilities and contributions of self and others. (OCSGE), 1998.
- ◆ **Luke 15: 1-7** - *Parable of the Lost Sheep*

#### Assessment

- ◆ Student-teacher conference to determine whether or not students can recognize and order to numbers to 50. See *Performance Assessment: Student-Teacher Conference* form, p. 38.
- ◆ Check for accuracy of written work as the students complete *Appendices 8, 9 and 10*.



# **Number Sense and Numeration**



*Appendix #7*

1

2

3

4

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13

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21

22

23

24



# Number Sense and Numeration

## *Appendix #7*

|           |           |           |           |           |           |
|-----------|-----------|-----------|-----------|-----------|-----------|
| <b>0</b>  | <b>25</b> | <b>26</b> | <b>27</b> | <b>28</b> | <b>29</b> |
| <b>30</b> | <b>31</b> | <b>32</b> | <b>33</b> | <b>34</b> | <b>35</b> |
| <b>36</b> | <b>37</b> | <b>38</b> | <b>39</b> | <b>40</b> | <b>41</b> |
| <b>42</b> | <b>43</b> | <b>44</b> | <b>45</b> | <b>46</b> | <b>47</b> |

*Appendix #7*

|           |           |           |           |           |           |
|-----------|-----------|-----------|-----------|-----------|-----------|
| <b>48</b> | <b>49</b> | <b>50</b> | <b>51</b> | <b>52</b> | <b>53</b> |
|-----------|-----------|-----------|-----------|-----------|-----------|

|           |           |           |           |           |           |
|-----------|-----------|-----------|-----------|-----------|-----------|
| <b>54</b> | <b>55</b> | <b>56</b> | <b>57</b> | <b>58</b> | <b>59</b> |
|-----------|-----------|-----------|-----------|-----------|-----------|

|           |           |           |           |           |           |
|-----------|-----------|-----------|-----------|-----------|-----------|
| <b>60</b> | <b>61</b> | <b>62</b> | <b>63</b> | <b>64</b> | <b>65</b> |
|-----------|-----------|-----------|-----------|-----------|-----------|

|           |           |           |           |           |           |
|-----------|-----------|-----------|-----------|-----------|-----------|
| <b>66</b> | <b>67</b> | <b>68</b> | <b>69</b> | <b>70</b> | <b>71</b> |
|-----------|-----------|-----------|-----------|-----------|-----------|



# Number Sense and Numeration

## *Appendix #7*

|           |           |           |           |           |           |
|-----------|-----------|-----------|-----------|-----------|-----------|
| <b>72</b> | <b>73</b> | <b>74</b> | <b>75</b> | <b>76</b> | <b>77</b> |
| <b>78</b> | <b>79</b> | <b>80</b> | <b>81</b> | <b>82</b> | <b>83</b> |
| <b>84</b> | <b>85</b> | <b>86</b> | <b>87</b> | <b>88</b> | <b>89</b> |
| <b>90</b> | <b>91</b> | <b>92</b> | <b>93</b> | <b>94</b> | <b>95</b> |

*Appendix #7*

|    |    |    |    |     |
|----|----|----|----|-----|
| 96 | 97 | 98 | 99 | 100 |
| 96 | 97 | 98 | 99 | 100 |
| 96 | 97 | 98 | 99 | 100 |
| 96 | 97 | 98 | 99 | 100 |



# Number Sense and Numeration

## Appendix #8

### All In Order

Look carefully at each set of numbers below. Write in the missing numbers.

|    |  |  |    |    |  |  |
|----|--|--|----|----|--|--|
| 27 |  |  | 30 | 31 |  |  |
|----|--|--|----|----|--|--|

|  |  |    |  |  |    |  |
|--|--|----|--|--|----|--|
|  |  | 43 |  |  | 46 |  |
|--|--|----|--|--|----|--|

|  |    |  |  |    |  |    |
|--|----|--|--|----|--|----|
|  | 19 |  |  | 22 |  | 24 |
|--|----|--|--|----|--|----|

|  |   |  |   |   |  |  |
|--|---|--|---|---|--|--|
|  | 1 |  | 3 | 4 |  |  |
|--|---|--|---|---|--|--|

|    |  |    |    |  |  |  |
|----|--|----|----|--|--|--|
| 33 |  | 35 | 36 |  |  |  |
|----|--|----|----|--|--|--|

# The Ontario Curriculum: Mathematics

## Appendix #9

### All In Order

Order these numbers from largest to smallest.

|    |    |    |  |  |  |  |
|----|----|----|--|--|--|--|
| 23 | 42 | 17 |  |  |  |  |
|----|----|----|--|--|--|--|

|   |    |    |  |  |  |  |
|---|----|----|--|--|--|--|
| 2 | 50 | 48 |  |  |  |  |
|---|----|----|--|--|--|--|

|    |    |    |    |  |  |  |  |
|----|----|----|----|--|--|--|--|
| 36 | 38 | 24 | 28 |  |  |  |  |
|----|----|----|----|--|--|--|--|

|    |    |    |    |  |  |  |  |
|----|----|----|----|--|--|--|--|
| 15 | 18 | 37 | 39 |  |  |  |  |
|----|----|----|----|--|--|--|--|

|    |    |    |    |  |  |  |  |
|----|----|----|----|--|--|--|--|
| 47 | 42 | 49 | 36 |  |  |  |  |
|----|----|----|----|--|--|--|--|

|    |   |    |    |  |  |  |  |
|----|---|----|----|--|--|--|--|
| 32 | 7 | 12 | 20 |  |  |  |  |
|----|---|----|----|--|--|--|--|

Circle the largest number in each group. Order these from smallest to largest.

|  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|



# Number Sense and Numeration



## Appendix # 10

Name \_\_\_\_\_

Date \_\_\_\_\_

Here  we go ..1..2..3..

|   |  |  |  |  |  |  |  |  |     |
|---|--|--|--|--|--|--|--|--|-----|
| 1 |  |  |  |  |  |  |  |  |     |
|   |  |  |  |  |  |  |  |  |     |
|   |  |  |  |  |  |  |  |  |     |
|   |  |  |  |  |  |  |  |  |     |
|   |  |  |  |  |  |  |  |  |     |
|   |  |  |  |  |  |  |  |  |     |
|   |  |  |  |  |  |  |  |  |     |
|   |  |  |  |  |  |  |  |  |     |
|   |  |  |  |  |  |  |  |  |     |
|   |  |  |  |  |  |  |  |  | 100 |