Challenge P26

T

May I Take Your Order?

Expectations

3m2 - compare and order whole numbers using concrete materials, drawings, and ordinals;

3m19 - use ordinal numbers to hundredth;

Teaching Strategies

- Ask students to make a list of the activities, which they do before coming to school, using the words *first, second, third, etc.* Use your own morning routine as an example.
- Students share their routines, using the appropriate *ordinals.*
- Have students complete *Appendix 5,* pages 3 - 26, 3 -27.

Suggested Resources

- *Appendix 5*, pages 3 - 26, 3 - 27
- crayons

Catholic School Commentary

(2) ***An effective communicator*** who speaks, writes and listens honestly and sensitively, responding critically in light of gospel values. (c) Presents information and ideas clearly and honestly and with sensitivity to others. **(OCSGE)**

Assessment

- Can the student use ordinals in real life situations?
- Can the student accurately complete *Appendix 5*?

Challenge P26

S

May I Take Your Order?

Materials

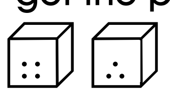
- *Appendix 5*, pages 3 - 26, 3 - 27
- crayons
- pencil

Procedures

- List, in order, the activities which you do each morning before coming to school, using the terms first, second, third, … *etc*.
- Share your list with the class, when called upon by the teacher.
- Complete *Appendix 5.*

Further Challenges

- Roll two dice. Multiply the numbers on each of the dice in order to get the product. Record the product using ordinal numbers; e.g.,



4 x 3 = 12 = twelfth

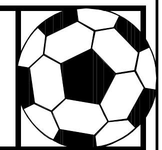
Appendix 5

Complete the following:

1. Draw a red circle in the fifth box.
2. Put an *X* in the fifteenth box.
3. Colour the thirty-eighth box green.
4. Draw a happy face in the sixtieth box.
5. Write your name in the seventh box.
6. What is in the tenth box? ______________________________
7. What is in the thirty-third box? ___________________________
8. What is in the fifty-second box? __________________________
9. What is in the seventy-fourth box? ________________________
10. What box is after the ninty-ninth box? _____________________

Appendix 5

May I Take Your Order?

1									
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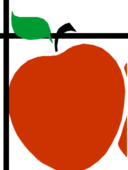
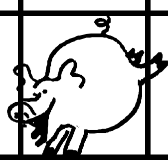
21									
31									
41									
51									
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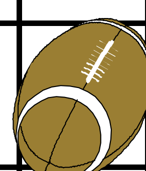
81									
91									

Challenge P27

T

A Fraction of...

Expectations

3m3 - represent common fractions and mixed numbers using concrete materials;

3m20 - represent and explain common fractions, presented in real-life situations, as part of a whole, part of a set, and part of a measure using concrete materials and drawings (e.g., find one-third of a length of ribbon by folding);

Teaching Strategies

- Using a piece of string, yarn, licorice, or tinsel (for Christmas), show students what one whole looks like.
- Demonstrate how to make 2 halves by folding the item in half and cutting it. Write on the board 1/2 + 1/2 = 1. Explain what each part of the fraction represents.
- Now cut one of the halves in half again to create quarters. Show the results on the board 1/4 + 1/4 = 1/2.
- Repeat this for thirds.
- Give the pupils several pieces of string and have them represent 1/2 with the first piece.
- Following the teacher procedures, they can glue appropriate pieces of string on paper for 1/4, 1/3, 1/5. Next to each piece of string they write the appropriate fraction on the paper.

Suggested Resources

- glue
- licorice, string, yarn
- paper
- pencil
- scissors

Catholic School Commentary

(3) ***A reflective, creative and holistic thinker*** who solves problems and makes responsible decisions with an informed moral conscience for the common good. (b) Creates, adapts, evaluates new ideas in light of the common good. **(OCSGE)**

Assessment

- Using string or yarn, can students represent different fractions?

Challenge P27

S

A Fraction of...

Materials

- glue
- licorice, string, yarn
- paper
- pencil
- scissors

Procedures

- Using a length of string, cut it in half to show 1/2 of the whole.
- Glue both halves on a piece of paper. Write 1/2 beside each piece.
- Using another piece of string, fold it in three. Cut it to show 1/3. Glue all three pieces on a piece of paper. Write 1/3 beside each piece.
- Repeat these steps for 1/4 and 1/5.

Further Challenges

- Divide a circle into equal parts. Label each part as a fraction.

Challenge P28

T

How Does This Relate?

Expectations

3m4 - understand and explain basic operations (addition, subtraction, multiplication, division) involving whole numbers by modelling and discussing a variety of problem situations (e.g., show division as sharing, show multiplication as repeated addition);

3m21 - investigate and demonstrate the propertiesof whole number procedures (e.g., 7 + 2 = 9 is related to 9 – 7 = 2);

3m25 - recall addition and subtraction facts to 18;

Teaching Strategies

- Divide the class into pairs of students.
- Give each pair 10 manipulatives and, using sticky pads, a number 10 card.
- Ask the pupils to create an addition sentence, using the manipulatives*; e.g.,* 7 + 3 = 10;

△ △ △ △ △ △ △ + △ △ △ = 10

- Ask students to start with the 10 card and make a subtraction sentence keeping the manipulatives in the same group*; i.e.,*

10 - △ △ △ = △ △ △ △ △ △ △

- Have the pupils write the relating sentences in their notebooks in pictures and words with an explanation of addition and subtraction.

Suggested Resources

- 10 manipulatives per pair of students
- notebook
- one sticky note per pair with the number 10 on it
- pencil

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. (e) Respects the rights, responsibilities and contributions of self and others. **(OCSGE)**

Assessment

- Can students show the relationship between subtraction and addition using number sentences?

Challenge P28

S

How Does This Relate?

Materials

- 10 manipulatives
- notebook
- one sticky note per pair with the number 10 on it
- pencil

Procedures

- With a partner, divide the manipulatives into two groups. Make an addition sentence which adds up to 10*; e.g.,*

  △ △ △ △ △ △ △ + △ △ △ = $\boxed{10}$

- Record your sentence, in your math notebook, using numbers and pictures as above.
- Starting with number 10, move your manipulatives to make a subtraction sentence. Be sure to keep the groups the same*; i.e.,*

  $\boxed{10}$ - △ △ △ = △ △ △ △ △ △ △

- Record your answers again. Explain the relationship between addition and subtraction.

Further Challenges

- Using a larger number of manipulatives, make ten addition and subtraction sentences. Write these in your notebook as before.
- Using your ten manipulatives, write the subtraction sentences which result when you take away the same number repeatedly*; e.g.,* take away 1 repeatedly, take away 2 repeatedly, *etc.,* until you reach zero.

Challenge P29

T

Press On!

Expectations

3m10 - use a calculator to solve problems beyond the required pencil-and-paper skills.

3m22 - use a calculator to examine number relationships and the effect of repeated operations on numbers (e.g., explore the pattern created in the units column when 9 is repeatedly added to a number);

Teaching Strategies

- Using calculators, have students follow oral instructions in order to examine number relationships such as, *Press 3 + 4 =*. The students do this on their calculators and provide the answers.
- Repeat this several times using different numbers.
- Write the following instructions on the board: *6 + + = Keep pressing the + sign =*. Ask students what is happening with this procedure.
- Have the pupils repeat this procedure and identify the pattern*; i.e.,* counting by 2's, 3's, *etc.*

Suggested Resources

- *Appendix 6,* page 3 - 35, for students who require further challenges
- class set of calculators
- crayons

Catholic School Commentary

(4) A self-directed, responsible, lifelong learner who develops and demonstrates their God-given potential. (b) Demonstrates flexibility and adaptability. **(OCSGE)**

Assessment

- Can the student use a calculator to examine number relationships?
- Can the student repeat operations and identify the patterns created?

Challenge P29

S

Press On!

Materials

- *Appendix 6,* page 3 - 35, for further challenges
- calculator
- crayons

Procedures

- Listen and follow your teacher's instructions on the use of your calculator in this activity.
- Identify the patterns created by pressing the given numbers, on your calculator, and the operation signs given.
- Hint

  Press 7 + + = Keep pressing the = sign [you should see 7, 14, 21, 28, 35 …]

Further Challenges

- Pick a number between 1 and 10. Press (the number) + (the number) = record the number. Press = 10 more times and record the number. For each of the above steps, colour the numbers on the number chart, *Appendix 6*, and extend the pattern.

Appendix 6

Press On!

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Challenge P30

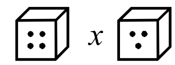
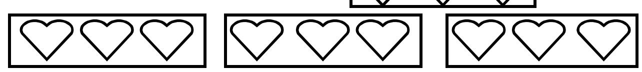
T

Keep Rolling

Expectations

3m4 - understand and explain basic operations (addition, subtraction, multiplication, division) involving whole numbers by modelling and discussing a variety of problem situations (e.g., show division as sharing, show multiplication as repeated addition);
3m6 - develop proficiency in multiplying and dividing one-digit whole numbers;
3m23 - interpret multiplication and division sentences in a variety of ways (e.g., using base ten materials, arrays);
3m27 - demonstrate and recall multiplication facts to 7 x 7 and division facts to 49 ÷ 7 using concrete materials;

Teaching Strategies

- Divide the class into pairs.
- Give each group two dice and have them roll them. They multiply the results to form a multiplication sentence*; i.e.,* 
  4 *x* 3 =12
- Have students draw a picture to show a multiplication sentence*; e.g.,* 
  
  = 12
- Then have the pupils write a related division sentence; e. g., 12 ÷ 4 = 3
- Repeat procedure 5 times.

Suggested Resources

- a pair of dice per group
- paper
- pencil

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. (e) Respects the rights, responsibilities and contributions of self and others.

Assessment

- Can the student explain the relationship between multiplication and division, using numbers, pictures and words.

Challenge P30

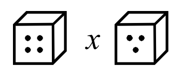
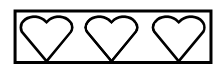
S

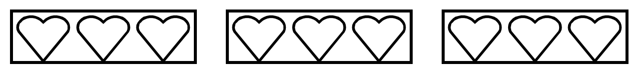
Keep Rolling

Materials

- pair of dice
- paper
- pencil

Procedures

- With your partner, each of you roll one dice. Then multiply the numbers; *e.g.,*  *4 x 3 = 12*
- *Draw a picture to show your multiplication picture; e.g.,* 



= 12.

- Write a related division sentence; *e.g.,* 12 ÷ *4 = 3.*
- *Repeat these steps at least five times.*

Further Challenges

- Pretend that each dot on the dice represents a 10. Follow the same procedure, but use your calculator to check your answers.

Challenge P 31

T

Colour By Numbers

Expectations

3m7 - select and perform computation techniques (addition, subtraction, multiplication, division) appropriate to specific problems and determine whether the results are reasonable;

3m24 - identify numbers that are divisible by 2, 5, or 10;

Teaching Strategies

- Orally review counting skills by 2's, 5's, 10's up to 100.
- Give the students the number chart, *Appendix 7,* page 3 - 41. Ask them to circle numbers divisible by ten.
- Colour the numbers, divisible by ten, yellow.
- Draw a triangle around numbers divisible by 5.
- Remind students that one number may be divisible by a number of others*; i.e.,* 2, 5, 10, 30, *etc*.

Suggested Resources

- *Appendix 7*, page 3 - 41
- pencil
- yellow crayon or pencil crayon

Catholic School Commentary

(4) A self-directed, responsible, lifelong learner who develops and demonstrates their God-given potential. (c) Takes initiative and demonstrates Christian leadership.

Assessment

- Can the student accurately complete *Appendix 7,* showing what numbers are divisible by 2, 5, and 10.

Challenge P 31

S

Colour By Numbers

Materials

- *Appendix 7*, page 3 - 41
- pencil
- yellow crayon or pencil crayon
- ruler

Procedures

- *Complete Appendix 7.*

Further Challenges

- Using your ruler, on *Appendix 7*, draw a diagonal line from 1 to 100. Now draw a diagonal line from 10 to 91. You now have a large X. Write the addition pattern created by the X*; e.g.,* from 1 to 12, add 11, then add 11 to get to 23, *etc.* What pattern did you notice?

Appendix 7

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

1. Circle numbers divisible by 10.
2. Colour yellow the numbers divisible by 2.
3. Draw a triangle around the numbers divisible by 5.
4. What numbers are divisible by 2, 5 and 10?

Challenge P32

T

What's Your Number?

Expectations

3m7 - select and perform computation techniques (addition, subtraction, multiplication, division) appropriate to specific problems and determine whether the results are reasonable;

3m26 - determine the value of the missing term in an addition sentence (e.g., 4 + _ = 13);

3m28 - mentally add and subtract one-digit and two-digit numbers.

Teaching Strategies

- Have students stand up and play the following game:
  - Step forward 3 times, then back 5 times. How many steps did you take in total?
  - Hop 6 times. Now hop 7 more times. How many hops did you make altogether?
  - Touch the ground 3 times. If you touch the ground a total of 10 times, how many more times do you need to touch the ground?
- Repeat this game with different commands; *e.g.,* clapping, snapping, *etc.*
- Have the pupils complete *Appendix 8.*

Suggested Resources

- *Appendix 8*

Catholic School Commentary

(3) ***A reflective, creative and holistic thinker*** who solves problems and makes responsible decisions with an informed moral conscience for the common good. (e) Adopts a holistic approach to life by integrating learning from various subject areas and experience. **(OCSGE)**

Assessment

- Can the student mentally add and subtract one-digit and two-digit numbers accurately?
- Can the student find the value of the missing term when adding?

Challenge P32

S

What's Your Number?

Materials

- *Appendix 8*

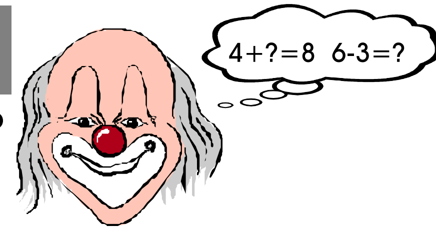
Procedures

- Follow your teacher's instructions. Be ready to add and subtract in your head!
- Complete *Appendix 8.*

Further Challenges

- Make up 10 questions with one number missing. Exchange these with someone in the class. Complete the questions which you receive. Be ready to help your partner complete the questions you created.

Appendix 8



What's Your Number?

Addition

a) 2+6=	d) 8+9=	g) 10+9=	j) 6 +4
b) 4+8=	e) 7+6=	h) 3+4=	k) 9 +3
c) 7+10=	f) 6+9=	l) 2+8=	l) 6 +5

Subtract

a) 6-3=	d) 8-6=	g) 6-5=	j) 9 -6
b) 7-2=	e) 7-6=	h) 1-1=	k) 10 -5
c) 4-1=	f) 9-4=	l) 7-5=	l) 8 -7

Find the Missing Number

a) 8- ___ =3	c) ___ - 2=	e) 20- ___ =15
b) 3+ ___=9	d) 15+___=17	f) ___+___=12

Challenge P33

T

Construct A Number

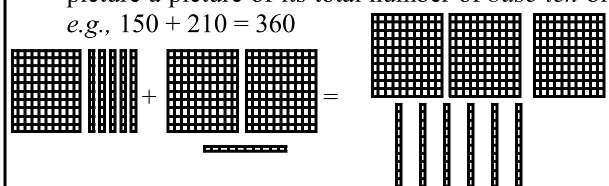
Expectations

3m5 - develop proficiency in adding and subtracting three-digit whole numbers;

3m29 - add and subtract three-digit numbers with and without regrouping using concrete materials;

Teaching Strategies

- With the students working in groups of two, have them write a three-digit number and say it out loud.
- Have them represent that number with *base ten* blocks.
- Have students select a second three-digit number and add it to the first number. Again represent this number with *base ten* blocks. Each group of students draws a picture a picture of its total number of *base ten* blocks; *e.g.,* 150 + 210 = 360



- This procedure should be repeated for subtraction (remind the pupils that the second number must be smaller).
- Have them do three each of addition and subtraction.

Suggested Resources

- *base ten* blocks
- paper
- pencils

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. **(OCSGE)**

Assessment

Challenge P33

S

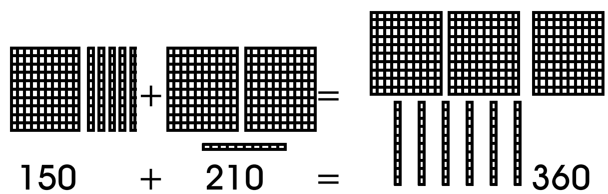
Construct A Number

Materials

- *base ten* blocks
- paper
- pencils

Procedures

- Working with a partner, the first person makes up a three-digit number, says it aloud and writes it down.
- The second person makes up another three-digit number, says it aloud and adds it to the first number.
- Together you and your partner represent the number with *base ten* blocks and draw a picture of the total number of blocks*; i.e.,*



150 + 210 = 360

- Follow these steps again, but make up a subtraction question. Be sure that the first number is bigger than the second one.
- Do three more addition and three more subtraction questions.

Further Challenges

- Have the students grab a handful of blocks, sort them and write the number.
- Take another handful of blocks, sort them, write the number and add the numbers together. Draw the total number using the blocks.
- Repeat this activity.

Challenge P34

T

A Buck or Two

Expectations

3m5 - develop proficiency in adding and subtracting three-digit whole numbers;

3m30 - add and subtract money amounts and represent the answer in decimal notation (e.g., 5 dollars and 75 cents plus 10 cents is 5 dollars and 85 cents, which is $5.85);

Teaching Strategies

- Using classroom objects, ask students to estimate its cost.
- Draw the object on the board. Write its cost using decimal notation*; e.g.,* pencil, .50.
- Repeat this using one other object.
- Ask the students to add the cost*; i.e.,*

  $ .50 pencil
  $ 2.50 notebook
  $ 3.00
- Using magazines, ask students to cut out items, which they wish to purchase, and glue them on white paper.
- Have students complete the activity.

Suggested Resources

- glue
- magazines
- paper
- pencils
- scissors

Catholic School Commentary

(7) ***A responsible citizen*** who gives witness to Catholic social teaching by promoting peace, justice and the sacredness of human life. (i) Respects the environment and uses resources wisely. **(OCSGE)**

Assessment

- Can the student add and subtract money and provide the answer in decimal notation?

Challenge P34

S

A Buck or Two

Materials

- glue
- magazines
- paper
- pencils
- scissors

Procedures

- Cut out six items from a magazine. Glue them on the top half of a white piece of paper.
- Estimate the cost of each item and record its price below the picture.
- How much would it cost to buy…
  - a) two of your items?
  - b) two of your cheapest items?
  - c) two of your most expensive items?
- If you were given $ 50.00 to purchase one item, how much would you have left?

Further Challenges

- Have students look at grocery flyers and choose forty dollars worth of groceries.
- Have them record what they have chosen.

Challenge P35

T

I've Got A Problem

Expectations

3m8 - solve problems and describe and explain the variety of strategies used;
3m9 - justify in oral or written expression the method chosen for addition and subtraction, estimation, mental computation, concrete materials, algorithms, calculators;
3m31 - pose and solve number problems involving more than one operation (e.g., if there are 24 students in our class and 5 boys and 9 girls wore boots, how many students did not wear boots?);
3m32 - use appropriate strategies (e.g., pencil and paper, calculator, estimation, concrete materials) to solve number problems involving whole numbers;
3m33 - use various estimation strategies (e.g., clustering in tens, rounding to hundreds) to solve problems, then check results for reasonableness.

Teaching Strategies

- The teacher writes the following strategies on chart paper and teaches them to the class:
  a) read the problem to find out what is required;
  b) estimate the answer;
  c) identify the facts which are given;
  d) choose an operation*; i.e.,* addition or subtraction;
  e) answer the question; and
  f) write a statement of the answer;
  g) check your work with a calculator.
- Have the pupils complete *Appendix 9.* Remind them to complete all of the problem solving steps.

Suggested Resources

- *Appendix 9*
- calculators
- chart paper
- manipulatives
- markers
- paper
- pencils

Catholic School Commentary

(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)**

Assessment

- Can the student solve problems using the problem solving steps?
- Can the student pose number problems involving more than one operation?

Challenge P35

S

I've Got A Problem

Materials

- *Appendix 9*
- calculators
- pencils

Procedures

- Using the problem solving strategy chart, complete *Appendix 9.*

Further Challenges

- Create a number problem which involves more than one operation. Use the problem solving steps. Write the answer on the back of the page or card. Exchange your card with a partner. Solve each other's problem. Verify your answer with the one on the back of the page. Discuss your solution with your partner.

Appendix 9

I've Got A Problem

- Maria had 16 pies. She gave 8 to Cathy. How many does Maria have left?

a)

b)

c)

d)

e)

f)

g)

- Kiernan planted 30 trees. John planted 8 trees. Gord planted 9 trees. How many trees were planted altogether?

a)

b)

c)

d)

e)

f)

g)

- Aidan picked 18 flowers for his Mom. He lost 6, while walking home. He picked another 10. How many did he give to his Mom?

a)

b)

c)

d)

e)

f)

g)

- Carolina had 10 marbles. Julianna had 14. They each gave Nickolas 4 marbles. How many marbles does each child have?

a)

b)

c)

d)

e)

f)

g)