

Page 12 -14

### Dictation

1. Different people made their own number system to count.
2. The Hindu Arabic number system is what we use today.
3. The numerals which represent numbers are called digits.
4. The counting numbers are 1 2 3..
5. The natural numbers are 0 1 2 3.. ..

### Lesson 2 Rounding Numbers

Page 15 -14

### Dication

1. Rounding makes a number easier to read.
2. We round to a particular place value.
3. For example, 438 is nearer to 400 than to 500.
4. To round, look at the digit to the right of 4.
5. The number is less than 5, so we round down.

Page 17 -18

### Dication

1. The four basic operations are addition, subtraction, multiplication and division.
2. We find the sum when we add numbers together.
3. We find the difference when we subtract numbers.
4. We find the product when we multiply numbers.
5. We find the quotient when we divide numbers.

Page 18 -20

### Dictation

1. We use exponent notation to write the product of the same number.
2. For example,  $4 \times 4 \times 4$  is the same as  $4^3$ .
3. The four is called the base and the 3 is the exponent or power.
4. We read  $3^2$  as , three squared or three to the third power
5. We read  $4^3$  as four cubed or four to the third power.

Page 24- 25

### Dictation

1. A square number is the product of two of the same numbers.
2. It is called a square number because we can make square dots.
3. We can also call these numbers perfect squares.
4.  $2 \times 2 = 2^2 = 4$  is two squared.
5. Now, we can say that the square root of 4 is 2.

Pages 27 -28

### Dictation

1. Divisibility means one number can divide another and get a whole number.
2. A natural number is even if it is divisible by 2.
3. A natural number is odd if it is not divisible by 2.
4. We will test to see if a number is divisible by another.
5. We need to memorize these rules of divisibility.

## Pages 29- 31

### Dictation

1. A number is divisible by if the last digit is even.
2. A number is divisible by 3 if the sum of the digits is divisible by 3.
3. A number is divisible by 6 if it follows the rules for 2 and 3.
4. A number is divisible by 10 if it ends in a zero.
5. A number divisible by 11 has a complicated rule.

## Pages 31 - 34

### Dictation

1. The factors of a number are the numbers which divide exactly into it.
2. When a number is written as a product of factors, it is factorized.
3. For example, the factors of 6 are 1, 2,3 and 6.
4. Prime numbers have exactly two different factors.
5. Composite numbers have more than two different factors.

## Pages 36 - 38

### Dictation

1. The Highest Common Factor(HCF) of two or more numbers is the largest factor of all the numbers.
2. For example, the HCF of 12 and 18 is 6.
3. The multiples of a number have that number as a factor.
4. The Lowest Common Multiple(LCM) of two or more numbers is the smallest factor of all the numbers.
5. We use the HCF and the LCM to add and reduce fractions.

Pages 44 - 47

### Dictation

1. Intersection is the point where two lines cross.
2. A point is a mark to make a location only.
3. A line passes through two points and goes forever.
4. A line segment connects only two points.
5. A ray starts at a point and goes forever through another point.

Pages 47 - 50

### Dictation

1. The size of an angle is the amount of the turn between the arms.
2. A straight angle has a turn of  $\frac{1}{2}$  or 180 degrees.
3. A right angle has a turn of  $\frac{1}{4}$  or 90 degrees.
4. An acute angle has a turn of less than a  $\frac{1}{4}$  turn.
5. An obtuse angle is between  $\frac{1}{4}$  turn and  $\frac{1}{2}$  turn-90 to 180.

Pages 50 - 54

### Dictation

1. Two lines are parallel if they never meet.
2. We use // to show two lines are parallel.
3. Two lines are perpendicular if they intersect at right angles.
4. We use  $\perp$  to show two lines are perpendicular.
5. Complementary angles add to 90 degrees while supplementary angles add to 180 degrees.

## Pages 54 - 57

### Dictation

1. Vertical angles are formed when two lines intersect.
2. They are always opposite each other and always equal.
3. Corresponding angles are on the same side of the transversal and the same side of the two lines.
4. Alternate interior angles are on opposite sides of the transversal and between the two lines.
5. Co-interior lines are on the same side of the transversal and between the two lines.

## Pages 57 - 59

### Dictation

1. If two lines are parallel and cut by a transversal then corresponding angles are equal.
2. If two lines are parallel and cut by a transversal then alternate interior angles are equal.
3. If two lines are parallel and cut by a transversal then same sided interiors are supplementary.
4. Supplementary angles add up to 180 degrees.
5. We must memorize these special pairs of angles.

## Pages 60 - 65

### Dictation

1. We can prove lines are parallel using the converse of statements.
2. If two lines are cut by a transversal and corresponding angles are equal then the lines are parallel.
3. If two lines are cut by a transversal and alternate interior angles are equal then the lines are parallel.

4. If two lines are cut by a transversal and same sided interiors are supplements then the lines are parallel.
5. We will use a ruler and compass to make constructions.

Pages 70 - 71

### Dictation

1. Calculators are useful but we need to have good number skills too.
2. Number strategies help us do mental math.
3. We use estimation to see if the answer is reasonable.
4. We need an order of operations to agree on.
5. When we add two numbers their order is not important.

Page 72

### Dictation

1. Today we will learn new ways to subtract.
2. We call these new ways - strategies.
3. We can try subtracting one place value at time.
4. Also, we can use a bigger number then add 1.
5. We can also do the adding strategy.

Page 73 - 74

### Dictation

1. Today we will learn new multiplication strategies.
2. We can try to write a number as a power of 10.
3. We can change the order of the numbers.
4. We can perform multiplication one value at a time.
5. We can multiply by a larger number then subtract.

Page 74 - 76

### Dictation

1. The dividend  $\div$  divisor equals the quotient.
2. One strategy is to divide by a common factor.
3. Look for a multiple of the divisor which is close to the dividend.
4. We can also do long division.
5. Division is really just subtraction.

Page 76 - 77

### Dictation

1. Before we used rounding to estimate numbers.
2. An estimate can give us a good idea of the number of items.
3. Estimating helps us to see if we made a mistake.
4. We usually round to one significant figure.
5. We call this one figure approximation.

Page 78 - 80

### Dictation

1. Today we will look at the order of operations in an expression.
2. We will use the acronym BEDMAS to help us.
3. B stands for brackets and we do this operation first.
4. E stands for exponents and we do this second.
5. Then we Divide, Multiply and then Add and subtract.

Page 80 - 81

### Dictation

1. Today we will consider real-world problems using order of operations.
2. We will write a mathematical expression with numbers and operations.
3. We will need to decide what operations to perform.
4. We will then need to decide what the order should be.
5. If necessary, we can use brackets to help.

Page 86

### Dictation

1. Numbers less than zero are negative numbers.
2. Can you think of a time you used negative numbers?
3. Today we have a table about soccer teams.
4. We will look at the goal differences.
5. The goal difference is goals for minus goals against.

Pages 87- 88

### Dictation

1. Integers is the set of all whole numbers.
2. Counting numbers are 1, 2, 3 .....
3. Integers include positive and negative numbers.
4. We can use a number line to show positive and negative numbers.
5. Increase means to go to the right on a number line and decrease means to go to the left.



## Pages 89 - 90

### Dictation

1. There are many words that give the opposite of positive and negative.
2. Some words refer to the direction we are moving.
3. The quality is increasing and means to move to the right.
4. The quality is decreasing and means to move to the left.
5. We will look at different words for directions on the number line.

## Pages 90 - 93

### Dictation

1. Today we will add and subtract numbers on the number line.
2. When we add a positive number we move to the right.
3. When we subtract a positive number we move to the left.
4. We use the same rules if the numbers are negative.
5. A number line helps us see the operations.

## Pages 93 - 95

### Dictation

1. Today we will look at adding and subtracting negative numbers.
2. When we add to positive numbers we just add them.
3. When we add a positive to negative we need to subtract.
4. When we subtract positive numbers we just subtract.
5. Remember, subtract means to add the opposite.

## Pages 96

### Dictation

1. A magic square has whole numbers in each grid.
2. A magic square has all the columns, rows and diagonals that add to the same number.
3. Magic squares have a long history.
4. It is fun to fill out a magic squares.
5. Magic squares are like sudoku.

## Pages 96 - 98

### Dictation

1. A positive number times a positive number is always positive.
2. A negative number times a negative number is always positive.
3. A positive number times a negative number is always negative.
4. A negative number times a positive number is always negative.
5. We will think about why these rules are true.

## Pages 98 - 99

### Dictation

1. The rules for dividing negative numbers are the same as multiplying.
2. A positive divided by a positive is positive.
3. A positive divided by a negative is negative.
4. A negative divided by a positive is negative.
5. A negative divided by a negative is positive.

## Pages 100 - 101

### Dictation

1. We will do the order of operations with negative numbers today.
2. Do you remember the anagram BEDMAS?
3. With negative numbers the rule stays the same.
4. Still, you must look out for the sign of the numbers.
5. We use BEDMAS to simplify expressions.

## Pages 106 - 107

### Dictation

1. Fractions are used to show division of a whole number into parts.
2. The numeration is the number on top of the fraction.
3. The denominator is the number on the bottom of the fraction.
4. In the west, we say the numerator first then the denominator.
5. The fraction bar is the line that separates the two.

## Pages 107 - 110

### Dictation

1. Notice how the division sign looks like a fraction.
2. A fraction is a different way to write a division.
3. So,  $\frac{2}{3}$  is the same as 2 divided by 3.
4. We divide all of the numerator by the denominator.
5. When we evaluate a fraction we are just dividing.

## Pages 110 - 111

### Dictation

1. A fraction with the numerator less than the denominator is a proper fraction.
2. A fraction with the numerator greater than the denominator is an improper fraction.
3. A mixed number has a whole number part and a fraction part.
4. Improper fractions can be written as a mixed fraction.
5. We can write an improper fraction as a mixed fraction.

## Pages 112 - 113

### Dictation

1. On a number line we can divide the gaps between whole numbers.
2. This lets us include fractions with any denominator.
3. Then we can plot the fractions on the number line.
4. This lets us see the ascending order of the fractions.
5. Ascending means getting bigger and bigger.

## Pages 113 - 114

### Dictation

1. Two fractions are equal if they have the same value.
2. Equal fractions are on the same point on a number line.
3. To make equal fractions we can multiply both the denominator and numerator by 1.
4. Remember, one can be expressed as  $\frac{2}{2}$  or  $\frac{3}{3}$  and etc.
5. We can also divide the fraction by 1.

## Pages 114 - 115

## Dictation

1. A fraction is in lowest terms if it is written in the smallest integers.
2. Simplest form is another name for lowest terms.
3. We divide the numerator and denominator by their HCF- highest common factor.
4. The HCF is the biggest integer that can be divided into the numerator and denominator.
5. For example,  $\frac{5}{10}$  can be divided by 5 and becomes  $\frac{1}{2}$ .

## Pages 115 - 116

### Dictation

1. We can also reduce fractions by canceling common factors of both the numerator and denominator.
2. We first have to write the numerator and denominator as a product of two factors.
3. One of these factors should be the same in both the numerator and denominator of the fraction.
4. For example,  $\frac{4}{10}$  equals  $\frac{2 \cdot 2}{2 \cdot 5}$  and the 2s cancel.
5. Remember, the 2s cancel means they become 1.

## Pages 116 - 117

### Dictation

1. We can compare quantities in the real world as fractions.
2. Remember that the units need to be the same.
3. For example, 50 cents to 3 dollars has the same units.
4. Remember, that one dollar is 100 cents.
5. You will have to know some conversions.

Pages 117 - 119

Dictation

1. We can compare fractions in a number of ways.
2. First, we can graph them on a number line.
3. Second, we can write the fractions with the same denominator.
4. We will use the lowest common denominator(LCD) to find the same denominator for different fractions.
5. Using the LCD is usually the easiest way to compare fractions.

Pages 119 - 121

Dictation

1. To add or subtract fractions the denominators have to be the same.
2. Remember to use the LCD to find the common denominators.
3. We then add or subtract only the numerators.
4. For example,  $\frac{2}{5} + \frac{1}{4}$  has a LCD of 20.
5. We will use prime factorization to find the LCD.

Pages 121 - 125

Dictation

1.  $\frac{2}{3} * 5$  means 5 groups of  $\frac{2}{3}$ .
2. We can show this with 5 wholes and shade  $\frac{2}{3}$  of each.
3. Then we will have  $10/3$ .
4. We will make a diagram to show this process.
5. We can do the same for multiplying a fraction by a fraction.

Pages 125 - 128

Dictation

1. Two numbers are reciprocals if their product is 1.
2. For example  $\frac{1}{2}$  is the reciprocal of 2 because  $\frac{1}{2} * 2 = 1$ .
3. When we divide fractions we multiply by the reciprocal.
4. For example,  $5 \div \frac{1}{2} = 5 * 2$  which is 10.
5. The definition of division is to multiply by the reciprocal.

Pages 134 - 136

Dictation

1. We use decimal numbers for money and measurements of length, time and weight.
2. Our number system is a place value system.
3. Using a decimal point allows us to represent values between whole numbers.
4. The place value system is in base ten which means each place value changes by a power of ten.
5. We will write numbers in their expanded form.

Pages 136 - 138

Dictation

1. We can graph decimals on a number line just like fractions.
2. We will divide the number line into tenths.
3. Decimals can also be positive or negative.
4. It is easier to order decimals than fractions.
5. We will use the terms tenths and hundredths.

Pages 138 - 139

Dictation

1. To compare decimals start with the largest place values.
2. For example, write in ascending order : 8.66, 8.6 and 8.606
3. Each of the numbers has 8 units and 6 tenths.
4. 8.66 has more hundredths so it is the largest.
5. 8.606 has more thousandths then 8.6 so it is the second largest.

Pages 139 - 141

Dictation

1. We can approximate decimals by rounding.
2. We will use a certain number of decimal places to round.
3. We can also use a certain number of significant figures.
4. We look to the left of the decimal place we are rounding.
5. If that place is less than 5, round down, else round up.

Page 141

Dictation

1. To convert a decimal to a fraction first write the decimal as a fraction with the denominator a power of ten.
2. Then simply write the fraction in lowest terms.
3. Remember that decimals are some unit of the power of 10.
4. For example, 0.8 can be written as  $\frac{8}{10}$  or  $\frac{4}{5}$ .
5. We can also write decimals as a mixed fraction.



Pages 141 - 142

Dictation

1. Converting fractions to decimals can be done in two ways.
2. First, we can simply make the denominator a factor of 10.
3. For example,  $3/100$  is just 0.03.
4. Sometimes we have to multiply the denominator so it is a factor of 10.
5. Second, we can just divide the numerator by the denominator.

Pages 142 - 144

Dictation

1. To add or subtract decimals we must line up the decimal places.
2. Then we add or subtract from right to left.
3. Sometimes we need to add an extra zero to line up the places.
4. Today, we often use calculators when we compute decimals.
5. We often use decimals when timing races.

Pages 145

Dictation

1. When we multiply by 10 each digit is 10 times greater than before.
2. When we multiply by 100 each digit is 100 times greater.
3. So, when we multiply by 10 we move the decimal one place to the right.
4. When we multiply by 100 we move the decimal two places to the right.
5. The power of the 10 tells us how many places to move the decimal.

## Pages 146

### Dictation

1. When we divide by a power of 10 we move the decimal one place to the left.
2. When we divide by 10 each digit has  $1/10$  of its previous value.
3. For example 88.0 divided by ten becomes 8.8.
4. Also if we divide 88.0 by 100 it becomes 0.88
5. Do you remember that  $10^3$  means 1000 or move 3 places.

## Pages 147 - 148

### Dictation

1. We have used the column method to multiply whole numbers.
2. We can use this method to multiply decimals but it can get confusing.
3. A better way is to convert the decimal to a fraction then multiply.
4. For example,  $3.4 * 27$  can be changed to  $34/10 * 27$ .
5. Then we can do the column method with the 34 and 27.

## Pages 149 - 150

### Dictation

1. To divide by a decimal we can use the same method we used for whole numbers.
2. We can also write the decimals as fractions.
3. Then we multiply the numerator and denominator by the same power of 10.
4. For example,  $1.8 \div 0.06$  can be written as  $1.8 * 100 / 0.06 * 100$ .
5. Today, we usually use calculators to divide decimals.

## Pages 154 - 157

### Dictation

1. In algebra, we use letters and symbols to represent unknown numbers.
2. The letter or symbol is called a variable because its value is unknown.
3. If we have a number of puppies we can call them  $p$  puppies.
4. We can use the variable to write a variable expression.
5. We simplify variable expressions using the same order of operation.

## Pages 158 - 159

### Dictation

1. Exponent notation is used to represent the product of like terms.
2. For example,  $2*2*2*2$  can be written as  $2^4$ .
3. Another example is,  $a * a * a * a$  is the same as  $a^4$ .
4. In the last example  $a$  is the base and 4 is the power or exponent.
5. Another example,  $2 * a * a * a * b * b$  is equal to  $2a^3b^2$ .

## Pages 159 - 161

### Dictation

1. We need to describe mathematical expressions using words.
2. When we add we find the sum or total.
3. When we subtract we use the words minus or less than.
4. When we multiply we use the words times or product.
5. When we divide, we use the words divided by or quotient.

## Pages 161 - 162

### Dictation

1. The terms of an expression are separated by a + or - sign.
2. For example, the terms of  $3x + 2y + 8$  are  $3x$ ,  $2y$  and  $8$ .
3. A term is a constant if it does not contain a variable.
4. The coefficient of a term is the number part and its sign.
5. Like terms are terms with exactly the same variable form.

## Pages 162 - 166

### Dictation

1. Expressions are equal if they have the same value.
2. For example,  $2p + 3 + p + 3 = 3p + 6$  are equal.
3. We connect equal expressions with the = sign.
4. So we will decide questions like- is  $p + 2 + p + 4 = 2p + 5$ ?
5. Collecting like terms mean to add or subtract like terms.

## Pages 166 - 167

### Dictation

1. Collecting like terms means to simplify an expression.
2. When we add like terms we only add the coefficients.
3. When we add or subtract like terms the variable stays the same.
4. For example,  $2x + x$  equals  $3x$  not  $3x^2$ .
5. Collecting like terms can be done in a process.

## Pages 168 - 169

### Dictation

1. If we know the value of a variable in an expression we can do something.
2. We can substitute the value for the variables and get a value.
3. Substituting a value means to evaluate the expression.
4. When we substitute we change a variable expression into a numerical expression.
5. We will still use BEDMAS to change a variable expression to a numerical expression.

## Pages 170 - 173

### Dictation

1. A formula is an equation that connects two or more variables.
2. The plural of formula is formulae.
3. The subject of a formula which appears by itself.
4. If you are asked to solve for  $x$ , then  $x$  is the subject.
5. When you solve for the subject, you get it by itself.

## Pages 178 - 180

### Dictation

1. A percentage is used to compare a portion to its whole amount.
2. The whole is represented by 100% which has a value of 1.
3. % reads percent, which means in every hundred.
4. If we divide a whole into a hundred parts, each part is 1%.
5. A percent is like a fraction with a denominator with 100.

## Pages 180- 181

### Dictation

1. To convert a percentage to a fraction or decimal, we divide by 100%.
2. When you divide by 100 just move the decimal two places to the left.
3. When we convert a percentage to a fraction we must write it in the lowest terms.
4. Writing a percentage to a decimal is easy, just move the decimal.
5. Writing a percentage to a fraction is more complicated.

Pages 182- 184

Dictation

1. To change a decimal to a percentage multiply by 100%.
2. For example with 0.28 we multiply it by 100% to get 28%.
3. We can change fractions to percentage by making the denominator equal to 100.
4. For example, we change  $\frac{3}{5}$  to a percent by multiplying it by  $\frac{20}{20}$ .
5.  $\frac{3}{5}$  times  $\frac{20}{20}$  equal  $\frac{60}{100}$  or 60 %.

Pages 184- 187

Dictation

1. Percentages are often used to compare quantities.
2. So when comparing quantities it is useful to convert them to percentages.
3. Therefore, it is meaningful to compare like with like.
4. For example, comparing bikes to cars has no meaning.
5. We must make sure to compare the same units.

## Pages 187- 188

### Dictation

1. To find a percentage of a quantity we convert the percentage to a decimal.
2. We then multiply to find the required amount.
3. For example, 35% of 5000 is converted by  $.35 * 5000$ .
4. Another example, 12.4% of 6m is converted into cm by  $0.124 * 600 \text{ cm}$ .
5. We have to make sure we are using the same units.

## Pages 188- 190

### Dictation

1. There are many situations where quantities increased or decreased by a certain percentage.
2. For example, the attendance at a game has increased by 5%.
3. Or, the price of a dress is discounted by 15% in a sale.
4. To apply a percentage, first find the size of the change.
5. Next, apply this change to the original amount by adding or subtracting.

## Pages 190 - 191

### Dictation

1. A discount is when a seller reduces the price of an item.
2. A discount is often advertised as a percentage.
3. The usual price is called the mark up price.
4. The selling price is the marked price - the discount.
5. It is important to remember what the selling price equals.

## Pages 191 - 193

### Dictation

1. The change in a quantity is the final amount - original amount.
2. For example, if 30 kg changes to 35 kg the change is  $35 - 30$  or 5.
3. The percentage change is the change in quantity divided by the original amount.
4. After finding the change we must multiply by 100%.
5. We often use decimals to show this change.

## Pages 198 - 200

### Dictation

1. An equation is a mathematical statement that shows two expressions have the same value.
2. The two expressions are connected by an equal sign  $=$ .
3. The left side is on the left side of the  $=$  sign.
4. The right side is on the right side of the  $=$  sign.
5. The sign  $\neq$  means not equal.

## Pages 200 - 201

### Dictation

1. One way to solve simple equations is to just try different solutions.
2. This method is called trial and error and might take a long time.
3. A better way is to guess a solution and then check how close it is to the solution.
4. We call this method solving by inspection.
5. Still, there are more formal ways to solve an equation.



## Pages 202 - 204

### Dictation

1. The balance of an equation is like the balance of a set of scales.
2. A scale has two pans, one on the right and one another on the left.
3. If we put one kilogram weight in the left pan we need to put a one kilogram weight in the right pan to make them equal.
4. Now, if we add 2 kilograms to one side we must add 2 kilograms to the other side.
5. It is the same with equations, if we do an operation to one side we must do the same operation to the other side to keep them equal.

## Pages 205 - 207

### Dictation

1. Adding 5 and subtracting 5 have the opposite effect- they undo each other.
2. Addition and subtraction are inverse operations.
3. Likewise, multiplying by 2 and dividing by 2 have the opposite effect.
4. Multiplication and division are inverse operations.
5. We will use inverse operations to solve equations.

## Pages 208 - 209

### Dictation

1. To solve more complicated equations we must understand how they were made.
2. We can use algebraic flowcharts to examine how the equations were formed.
3. After making a flowchart, we can use inverse operations to undo the expression.
4. The inverse operations must be done in reverse order of BEMDAS.
5. The flowcharts will show us how to solve equations.

## Pages 210 - 212

### Dictation

1. To solve an equation we need to isolate the variable.
2. This means to get the variable by itself.
3. We isolate the variable by using inverse operations.
4. It is important to remember that the same operation must be done to both sides of an equation.
5. For example, with  $x + 7 = 8$  we need to subtract 7 from both sides of the equation.

## Pages 212 - 214

### Dictation

1. In a number of equations the variable appears more than once.
2. In this case, we need to collect like terms first.
3. Then we will isolate the variable by using inverse operations.
4. Do remember right, supplement and  $360^\circ$  degrees angles?
5. We can use algebra to solve problems in geometry.

## Pages 216- 217

### Dictation

1. Most real life problems are solved with sentences and not symbols.
2. To solve these problems, we must translate them into equations.
3. The first step is to determine what we want to find and assign it to a variable.
4. Next, we need to write an equation to represent the situation.
5. Remember the verb means = and divides the statement into a right and left sides.

## Pages 222- 225

### Dictation

1. We use a protractor to measure degrees of the angles of a triangle.
2. A regular polygon has all equal sides.
3. A vertex is the point where the sides of a polygon meet.
4. A polygon is a closed figure that only has straight lines that do not cross.
5. In a polygon the number of sides determine its name.

## Pages 226- 230

### Dictation

1. We classify triangles by their sides or angles.
2. We will use the words scalene, isosceles and equilateral for sides.
3. We will use acute, right and obtuse to classify by angles.
4. The sum of the angles of a triangle equals 180 degrees.
5. We will use equations to solve for different angles.

## Pages 230 - 231

### Dictation

1. If we extend any side of a triangle we can create an exterior angle.
2. The exterior angle theorem states that the measure of an exterior angle equals the sum of the two remote angles.
3. The two remote angles are the angles opposite the exterior angle.
4. We will look at the proof for an exterior angle.
5. An exterior angle can be used to find other angles.

Pages 232 - 234

Dictation

1. An isosceles triangle has at least two equal sides.
2. The third side is called the base.
3. The vertex between the equal sides is called the apex.
4. The angle of the apex is called the vertical angle.
5. The angles opposite the equal sides are the base angles.

Pages 234 - 236

Dictation

1. A quadrilateral is a polygon with four sides.
2. A parallelogram is a quadrilateral with both pairs of opposite sides parallel.
3. A rectangle and a square are special types of parallelograms.
4. A trapezoid and a kite are different types of quadrilaterals.
5. We will learn about the special features of each quadrilateral.

Pages 236 - 238

Dictation

1. A parallelogram has three special properties.
2. A rectangle also has three special properties.
3. A rhombus has four special properties.
4. A square has three special properties.
5. A kite has three special properties.

## Pages 238 - 239

### Dictation

1. We can do an activity to discover the sum of the angles in a quadrilateral.
2. We can divide a quadrilateral into two triangles.
3. We can use equations to find all the angles of a quadrilateral.
4. Sometimes, we will use the exterior angle theorem.
5. Later, we will find the sum of the angles of any polygon.

## Pages 246 - 249

### Dictation

1. We will study length, area, volume, capacity and mass in this chapter.
2. Some countries use the British Imperial System but most countries use the metric system.
3. The metric system uses power of tens - kilo means 1000 and mega means 1,000,000.
4. The metric system also uses -centi means  $1/100$  and milli means  $1/1000$ .
5. The meter is the standard unit of length.

## Pages 249 - 252

### Dictation

1. Perimeter means the boundary of a region.
2. In math, perimeter means the distance around an object.
3. The perimeter of a polygon is found by adding the lengths of the sides.
4. Before you add the lengths, make sure they are the same units.
5. Finding the perimeter is easy.

Pages 253 - 255

Dictation

1. Area is a measurement of the size of a surface.
2. One square millimeter is the area enclosed by a square with length 1 mm.
3. The area of a computer chip might be measured in  $\text{mm}^2$ .
4. We often use one square centimeter and one square meter.
5. One hectare is the area enclosed by a square with sides 100 m.

Pages 255 - 257

Dictation

1. The area of a rectangle = the length \* the width.
2. The area of a rectangle will be measured in squared units.
3. Make sure the units of the length and width are the same.
4. Sometimes we will use an equation to find the length of a side of a rectangle.
5. Finding the area of rectangles is easy too.

Pages 258 - 260

Dictation

1. The area of a triangle =  $\frac{1}{2}$  \* base \* height.
2. It is easy to prove this formula is true.
3. We can divide a rectangle into triangles.
4. When finding the area of a triangle you have to identify the height.
5. Some triangles have a height outside the triangle.

Pages 260 - 262

Dictation

1. The area of a parallelogram = base \* height
2. There is an easy way to see that this is true.
3. Finding the height of a parallelogram can be tricky.
4. Remember to make sure the base and height have the same unit.
5. Finding the area of a parallelogram is easy too.

Pages 262 - 263

Dictation

1. In American English we called a trapezium a trapezoid.
2. A trapezoid has exactly one pair of parallel sides.
3. The area of a trapezium =  $(a + b)/2 * h$ .
4. The a and b are the sum of the lengths of the parallel sides.
5. Again, the height (h) is the hardest variable to determine.

Pages 268 - 270

Dictation

1. A solid is a three-dimensional object that takes up space.
2. Each solid has three dimensions: width, height and depth.
3. Solids may have flat surfaces, curved surfaces or a combination of both.
4. An edge is where two surfaces meet and a vertex is a corner.
5. A cross-section of a solid is the shape of a slice through it.

## Pages 271 - 272

### Dictation

1. A net is a two-dimensional pattern which can be folded into a three dimensional solid.
2. A net helps us see the different faces of a solid.
3. Sometimes it is hard to see what solid a net represents.
4. Sometimes it is hard to see the net of a cube.
5. We will also find the surface area of solids.

## Pages 273 - 275

### Dictation

1. In this section we draw solids built out of cubic blocks.
2. These methods are called projections because we project the image of the three-dimensional solid onto two-dimensional paper.
3. To draw an isometric projection we use isometric paper made up of equilateral triangles.
4. It is quite fun to draw solids on isometric paper.
5. Remember , isometric paper is made up of equilateral triangles.

## Pages 280 - 282

### Dictation

1. The volume of a solid is the amount of space it occupies.
2. One cubic millimeter is the volume of a cube with side length 1.mm
3. One cubic centimeter is the volume of a cube with side 1 cm.
4. Volume of a solid always has units cubed or to the third power.
5. We can find a volume of a solid by counting how many cubes it contains.



Pages 282 - 285

Dictation

1. All prisms contain two identical end faces connected by straight lines.
2. Sometimes the identical end faces are rectangles or triangles.
3. The Volume of a prism = area of the end \* length.
4. So to find the volume of a prism first find the end faces.
5. Then we find the area of one face and then multiply by the length of the straight lines.

Pages 286 - 288

Dictation

1. The capacity of a container is the amount of fluid it can contain.
2. The basic unit of capacity is the liter(L).
3. Other units of capacity are milliliter(mL), kiloliter(kL) and megaliter(ML).
4. Capacity conversions are  $1 \text{ mL} = 1000 \text{ kL}$ ,  $1 \text{ kL} = 1000 \text{ L}$  and  $1 \text{ L} = 1000\text{mL}$ .
5. Many small objects have a capacity in mL.

Pages 289 - 291

Dictation

1. The mass of an object is a measure of how the object is.
2. The kilogram(kg) is the base unit of mass.
3. Other units of mass are milligrams(mg), gram(g) and ton(t).
4. Here are some conversions: One t = 1000 kg and one kg = 1000 g and one gram = 1000 mg.
5. We will have to convert between the units of mass.

## Pages 296 - 299

### Dictation

1. The coordinate plane is the intersection of two number lines.
2. The horizontal line is called the x-axis and the vertical line is called the y-axis.
3. The origin is the point where the two lines intersect.
4. Coordinates are the pair of the x and y - axes.
5. We can write the coordinates as an ordered pair.

## Pages 300 - 302

### Dictation

1. We can extend the x and y axes to positives and negatives.
2. The coordinate grid is called the Cartesian plane named after Rene Descartes.
3. The x and y axes divide the plane into 4 quadrants.
4. The quadrants are numbered in an anticlockwise direction.
5. The upper right hand quadrant is called quadrant 1.

## Pages 302 - 305

### Dictation

1. We can make a table of values to show pairs of points.
2. For every value of x there is a value for y.
3. We can plot each point on the coordinate plane.
4. A straight line is an infinite set of points in one direction.
5. We can graph a line by making a table of values.

## Pages 310 - 312

### Dictation

1. We will look at ways to compare quantities.
2. Ratios compare like quantities but rates compare different quantities.
3. A ratio is an ordered comparison of the same kind of quantities.
4. Again, we have to make sure the quantities have the same units.
5. We will write a ratio between two quantities.

## Pages 312 - 313

### Dictation

1. The ratio of quantities in a mixture is related to the fraction of each quantity in the whole.
2. For example, we can have a ratio of 1:4.
3. This would mean, that we have  $\frac{1}{5}$  ratio.
4. For example, we can have a ratio of adults to children.
5. If we have 1 to 5 adults we must have 4 to five children.

## Pages 313 - 314

### Dictation

1. Equal ratios have the same total area of a fraction.
2. We can write  $1:2 = 2:4 = 4:8$ .
3. We can multiply or divide both parts of a ratio to get equal ratios.
4. Remember, we have to divide each part by the same number.
5. Of course, we cannot divide by zero.

## Pages 315 - 316

### Dictation

1. A ratio is in lowest terms or simplest form if it is reduced.
2. To put a ratio in lowest terms divide both parts by the highest common factor.
3. For example, we can write 8:10 as 4 :5.
4. That is because we divided each part by 2 the HCF.
5. Two ratios are equal if they are written in lowest terms.

## Pages 316 - 317

### Dictation

1. A proportion is a statement that two ratios are equal.
2. For example,  $\frac{2}{5} = \frac{4}{10}$  is a proportion.
3. We can show that a proportion is true by cross multiplication.
4. So  $\frac{2}{5} = \frac{4}{10}$  becomes  $2 * 10 = 4 * 5$ .
5. Sometimes we say the product of the means equals the products of the extremes.

## Pages 318 - 319

### Dictation

1. We can use fractions to determine the size of each ratio.
2. For example, how would you divide \$100 into the ratio 2: 3?
3. So this ratio contains 5 parts- one gets 2 parts and another 3 parts.
4. So the first person gets  $100 * \frac{2}{5}$  which = 40 dollars.
5. The second person gets  $100 * \frac{3}{5}$  which = 60 dollars.

## Pages 320 - 321

### Dictation

1. We know that ratios compare quantities of the same unit.
2. Rates is a comparison of two different quantities.
3. One of the most common rates is speed, which is often miles per hour.
4. Since we are comparing different units we must include them in the expression.
5. Can you think of different kinds of rates we use everyday.

## Pages 321 - 323

### Dictation

1. When shopping it is important to get good value for your money.
2. Unit cost is the price we pay for a certain amount of an item.
3. For example we paid 500 Y for a kilogram of bananas.
4. We can compare the unit price of items to find the best deal.
5. We will use Unit cost to find the best deals between two items.

## Pages 328 - 330

### Dictation

1. Probability of an event is the chance it will happen.
2. Theoretical probability is the chance we expect to happen.
3. Experimental probability is the results of an experiment.
4. Impossible means an event has zero chance of occurring.
5. Certain means the event will definitely occur.

## Pages 330 - 332

### Dictation

1. Probability of an event occurring ranges from 0 to 1.
2. An impossible event has a 0 or 0% chance.
3. A certain event has a 1 or 100% chance.
4. We let  $P(E)$  represent the probability of an event happening.
5. The complement of an event is the probability it does not happen.

## Pages 333 - 334

### Dictation

1. The set of possible outcomes of an event is the sample space.
2. For example, with a die, there are 6 possible outcomes.
3. Often we use a spinner to choose a number.
4. Sometimes, we use the flip of a coin.
5. The sample space varies according to the event.

## Pages 334- 338

### Dictation

1. In some situations all the outcomes are equally likely.
2. The theoretical probability = number of outcomes/ total number of possible outcomes.
3. For example, the probability of tossing a head with a coin is the same as tossing a tail.
4. Or, a spinner with the numbers 1 to 6 has 6 total possible outcomes.
5. Therefore, the theoretical probability of spinning a 1 is  $\frac{1}{6}$ .

Pages 338- 340

Dictation

1. In experimental probability one does an experiment involving possible outcomes.
2. For example we can make a paper airplane and throw it in the air and see how it lands.
3. The plane can land right way up or upside down.
4. One can throw the plane say 50 times and keep a record how it lands.
5. From this data, one can find the probability of it landing the right way or upside down.

Pages 340- 340

Dictation

1. Today we will run an experiment about tossing a coin.
2. Each toss is a trial of the experiment.
3. For each toss, the probability that the coin lands on a head is  $\frac{1}{2}$ .
4. We will first do an experiment with 10 trials.
5. Then we will do experiments with 100 trials and more.

Pages 348- 350

Dictation

1. Statistics is the study of collecting, organizing and analyzing data.
  2. Many people and businesses use statistics to make decisions.
  3. We will need to target a population we want data from.
  4. A census means to get data about every individual in the whole population.
  5. A sample means to get data from just a part of the population.
- Pages 350- 352

## Dictation

1. Categorical data is data which can be placed in categories.
2. We will use a tally and a frequency table to organize the data.
3. A tally is used to count the data into categories.
4. The frequency gives the total number in each category.
5. The mode is the most frequency occurring category.

Pages 352- 355

## Dictation

1. A dot plot uses a dot to represent each data value.
2. A vertical column graph shows the frequency by the height of its column.
3. A horizontal bar chart shows the frequency of each category by the length of each bar.
4. A pie chart shows the frequency of each category by the angle of its sector.
5. We will look at these different ways to display data.

Pages 355- 357

## Dictation

1. A side-by-side column graph is used to compare data.
2. We use different colors for each data set to see the difference.
3. In a side-by side column graph we have two rectangles next to each other.
4. Do you remember that the mode is the most repeated data point.
5. For example, we can compare a student's favorite subject.



## Pages 357 - 360

### Dictation

1. Numerical data is data which is in number form.
2. Numerical data can be organized using a tally and frequency table.
3. Numerical data can be displayed using a dot plot, column graph or stem-and- leaf plot.
4. An outlier is a data point much lower or higher than the other data points.
5. Outliers can affect what the data looks like.

## Pages 360 - 361

### Dictation

1. A stem- and - leaf plot displays all the points of data.
2. A stem- and - leaf plot displays data in order of size.
3. A stem- and - leaf plot takes a data point and the last digit is called the leaf.
4. The first digits are called the stem.
5. For example, the data point 17 has a leaf of 7 and a stem of 1.

## Pages 362 - 365

### Dictation

1. The mean is the average of all the data values.
2. Mean = sum of data value/ number of data values.
3. The mode is the most repeated data point.
4. The median is the data point in the middle of the data.
5. The median, mean and mode of measures of central tendency.

Pages 365 - 367

Dictation

1. The range is the max data point - the minimum data point.
2. The range helps us see the spread of the data.
3. Most related data points do not have a big range.
4. If the range is large then we might have an outlier.
5. It is not hard to find the range.

Pages 372 - 375

Dictation

1. A transformation takes an object and moves it to form an image.
2. A translation is a type of transformation such that every point on an object is moved the same distance and direction to form the image.
3. We can describe a translation using a horizontal step to the right or left.
4. We can also use a vertical step that is up or down.
5. We can use a coordinate plane to help see a translation.

Pages 375- 377

Dictation

1. When we reflect an object in a mirror line , the image is its reflection.
2. To reflect an object we first need to find the line of symmetry or the mirror line.
3. Each image point is the same distance from the mirror line but on the other side.
4. The image point is also on a right angle from the mirror line.
5. Remember to draw lines at right angles from the mirror line.

Pages 378- 379

### Dictation

1. A line symmetry cuts a figure into two identical figures.
2. Some figures have many lines of symmetry.
3. For example, a circle has an infinite number of lines of symmetry.
4. Some figures have no lines of symmetry.
5. We will look at many different objects and different number of lines of symmetry.

Pages 380- 383

### Dictation

1. A rotation turns an object about a point through a given angle.
2. The center of rotation is the point the object rotates.
3. In math we rotate in an anticlockwise direction.
4. It is easier to rotate an object on a grid.
5. We can find a line of symmetry in a rotation.

Pages 383- 385

### Dictation

1. Rotational symmetry has an object that rotates over itself.
2. Rotational symmetry also has a point of rotation.
3. This point which an object rotates is called the center of rotational symmetry.
4. The order of rotational symmetry is the number of times an object rotates onto itself.
5. Rotational symmetry is difficult to envision.

Pages 385- 387

## Dictation

1. Enlarge means to make an image larger.
2. Reduction means to make an image smaller.
3. The scale factor is the amount an image is enlarged or reduced.
4. A scale factor greater than 1 means an enlargement.
5. A scale factor greater than 0 and less than 1 is a reduction.