

Numeracy

GRADE 8

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Numeracy in Grade 8

By Grade 8, students are expected to complete a variety of numeracy tasks based on their own research, as well as simulated tasks provided by their teachers. The following briefly describes typical Grade 8 numeracy tasks. For quick reference, these examples have been grouped according to purpose. In practice, a single numeracy task or problem may often address more than one purpose.

MONEY TASKS

- ◆ Determine the implications of various combinations of down payment and monthly installments for a purchase of own choice (e.g., CD player, mountain bike, snowboard).
- ◆ Use current exchange rates to convert Canadian currency to other currencies in order to compare costs of selected goods.
- ◆ Develop a budget for redecorating the classroom, outlining various options for saving money and comparing the benefit with other purchases (e.g., purchase of books, supplies, computers, furniture).
- ◆ Given a budget, design an eye-catching sign that can be seen effectively from a given distance.
- ◆ Research and compare prices on items that are advertised “on sale” or “special” at various stores.

CHANCE TASKS

- ◆ Design games involving chance.
- ◆ Research and present information about particular games of chance.

DATA ANALYSIS

- ◆ Design and conduct surveys, display and analyze data, and draw conclusions.
- ◆ Gather, display, and analyze data (number, type, target audience) about magazine advertisements or television commercials.
- ◆ Analyze the appropriateness of graphs from magazines, newspapers, or web sites; evaluate the data collection methods and the conclusions presented.
- ◆ Summarize, display, and analyze test scores from several classes.

- ◆ Conduct simple market research to make decisions about school fundraising activities.
- ◆ Explore various ways of summarizing and combining own marks to arrive at a letter grade.

MEASUREMENT AND OTHER APPLICATIONS OF SHAPE AND SPACE

- ◆ Compare area, diameter, and cost of small, medium, and large pizzas; show relationships in graphs; and determine which size pizza is the best buy.
- ◆ Create a “personal” box: calculate surface area, choose material, and determine the most economical way to use the material to cover the box.
- ◆ Estimate the minimum size of a moving-van needed for family furniture.
- ◆ Given specifications for sprinkler systems, have students determine optimum placement on home or school lawns. Variations include: comparing systems for lawns with the same perimeter but different areas or different perimeters with the same area; comparing costs of sprinkler systems with different ranges for individual sprinkler heads.
- ◆ Have students examine and construct questions related to various networks (e.g., bus, airplane, telephone routes) and construct their own networks for various purposes (e.g., the most efficient paper route for their neighbourhood).
- ◆ Use Pythagorean relationships to calculate the height of a building or tree.

Wherever possible, students should demonstrate numeracy through real situations and problems that can be solved in a variety of ways. Students should be expected to explain their procedures and results, and to suggest other situations where similar methods might be useful. In most cases, these tasks will require an extended amount of time. Relatively short questions with one correct procedure and answer are not appropriate for performance assessment.

Quick Scale: Grade 8 Numeracy

This Quick Scale is a summary of the criteria described in detail in the Rating Scale that follows. These criteria may apply at any time of the year, depending when specific skills or concepts are introduced.

Aspect	Not Yet Within Expectations	Meets Expectations (Minimal Level)	Fully Meets Expectations	Exceeds Expectations
SNAPSHOT	<i>The student is unable to meet basic requirements of the task without close, ongoing assistance. Unable to provide a relevant extension.</i>	<i>The work satisfies most basic requirements, but it is flawed or incomplete. May produce a simple extension.</i>	<i>The work satisfies basic requirements of the task. If asked, the student can produce a relevant extension or further illustration.</i>	<i>The work is complete, accurate, efficient, and insightful. The student may volunteer an alternative procedure, an extension, or an application.</i>
CONCEPTS AND APPLICATIONS* <ul style="list-style-type: none"> recognizing mathematics grade-specific concepts and skills patterns, relationships 	<ul style="list-style-type: none"> unable to identify or apply mathematical concepts or procedures needed often unable to recognize basic relationships or patterns 	<ul style="list-style-type: none"> identifies and applies most mathematical concepts and procedures; some errors or omissions may need prompting to recognize and use basic patterns and relationships 	<ul style="list-style-type: none"> identifies and applies mathematical concepts and procedures needed; may make minor errors or omissions recognizes and uses basic patterns and relationships 	<ul style="list-style-type: none"> identifies and applies mathematical concepts and procedures needed; efficient and thorough independently recognizes and uses patterns and relationships
STRATEGIES AND APPROACHES <ul style="list-style-type: none"> procedures estimates to verify solutions 	<ul style="list-style-type: none"> unsystematic and inefficient results or solutions are often improbable 	<ul style="list-style-type: none"> follows instructions without checking; often inefficient estimates of small quantities or simple operations are logical 	<ul style="list-style-type: none"> structures the task logically; may be inefficient estimates are logical 	<ul style="list-style-type: none"> structures the task efficiently; may find a shortcut or an alternative estimates are logical and relatively accurate
ACCURACY <ul style="list-style-type: none"> recording, substitutions, calculations 	<ul style="list-style-type: none"> often includes major errors 	<ul style="list-style-type: none"> may include some errors 	<ul style="list-style-type: none"> generally accurate; may include minor errors in calculations 	<ul style="list-style-type: none"> accurate
REPRESENTATION AND COMMUNICATION <ul style="list-style-type: none"> presenting work constructing charts, diagrams, and displays explaining procedures, results 	<ul style="list-style-type: none"> work is often confusing often omits required charts, diagrams, or graphs or makes major errors explanations are incomplete or illogical 	<ul style="list-style-type: none"> most work is clear; may be confusing in places constructs required charts, diagrams, or graphs; some omissions or errors explanations of procedures and results may be incomplete 	<ul style="list-style-type: none"> work is generally clear constructs required charts, diagrams, or graphs appropriately; may include minor errors explains procedures and results logically 	<ul style="list-style-type: none"> work is detailed, clearly labelled, and logically organized constructs required charts, diagrams, or graphs effectively explains procedures and results logically and thoroughly

* You may want to list key curriculum concepts or skills for a particular task.

Rating Scale: Grade 8 Numeracy

*These criteria may apply at any time of the year, depending when specific skills or concepts are introduced.**

Aspect	Not Yet Within Expectations	Meets Expectations (Minimal Level)
SNAPSHOT	<i>The student is unable to meet basic requirements of the task without close, ongoing assistance. The student is unable to provide a relevant extension.</i>	<i>The work satisfies most basic requirements, but it is flawed or incomplete. The student may produce an extension by making minor revisions to the original task.</i>
CONCEPTS AND APPLICATIONS** <ul style="list-style-type: none"> recognizing mathematics grade-specific concepts and skills patterns, relationships 	<ul style="list-style-type: none"> unable to identify mathematical concepts or procedures needed to solve a problem or complete a task does not apply relevant mathematical concepts and skills appropriately; major errors or omissions often unable to recognize basic patterns or relationships (e.g., how diameter affects circumference; comparison of two results) 	<ul style="list-style-type: none"> identifies most mathematical concepts and procedures needed to solve a problem; may oversimplify or miss some aspects of the task applies most relevant mathematical concepts and skills appropriately; some errors or omissions may need prompting to recognize and use patterns and relationships (e.g., how diameter affects circumference; comparison of two results)
STRATEGIES AND APPROACHES <ul style="list-style-type: none"> procedures estimates to verify solutions 	<ul style="list-style-type: none"> appears unsystematic and inefficient results or solutions are often improbable, indicating weak estimation skills 	<ul style="list-style-type: none"> generally follows specified instructions and procedures without checking; often inefficient estimates of small quantities or simple operations are logical; estimates of large or complex operations may be relatively inaccurate
ACCURACY <ul style="list-style-type: none"> recording, substitutions, calculations 	<ul style="list-style-type: none"> often includes major errors in recording, substitutions, or calculations, including inconsistent use of units and symbols 	<ul style="list-style-type: none"> may include some errors in recording, substitutions, or calculations (including units and symbols); answer or solution is usually “close,” and decimals are correct
REPRESENTATION AND COMMUNICATION <ul style="list-style-type: none"> presenting work constructing charts, diagrams, and displays explaining procedures, results 	<ul style="list-style-type: none"> work is often confusing and presented in an inconsistent format; key information may be omitted required charts, diagrams, or graphs are often omitted or seriously flawed explanation of procedures or results is incomplete or illogical; may omit mathematical language or err in using it 	<ul style="list-style-type: none"> most work is clear, easy to follow; may omit labels or headings and be confusing in places constructs required charts, diagrams, or graphs, but some features may be inappropriate, inaccurate, or incomplete (e.g., diagrams not to approximate scale; inappropriate intervals) explanations of procedures and results may be incomplete; uses little mathematical language

* Student performance that falls within the wide range of expectations for Grade 8 generally matches the Level 3/4 descriptions in Evaluating Mathematical Development Across Curriculum.

**Some of the curriculum concepts and skills students are expected to apply in completing numeracy tasks are specific to the type of task. The shaded charts below the Rating Scale show some of the concepts and skills most likely to apply in Grade 8.

MONEY TASKS

- rate (including unit rates)
- ratio
- proportion
- percentage
- markup, discount
- simple interest
- tax calculations (GST, PST)

CHANCE TASKS

- probability of n possible, equally likely events
- probability of two independent events
- concept of odds in win-or-lose situations

Fully Meets Expectations	Exceeds Expectations
<p><i>The work satisfies basic requirements of the task. If asked, the student can produce a relevant extension or illustration, and may be able to demonstrate an alternative procedure.</i></p>	<p><i>The work is complete, accurate, efficient, and insightful. The student may volunteer an alternative procedure, an extension, an application, or a further illustration of the same mathematical idea.</i></p>
<ul style="list-style-type: none"> identifies the mathematical concepts and procedures needed to solve a problem or complete a task, including relevant equations and algorithms applies relevant mathematical concepts and skills appropriately; may be somewhat inefficient or make minor errors or omissions recognizes and uses basic patterns and relationships (e.g., how diameter affects circumference; comparisons of two results) 	<ul style="list-style-type: none"> identifies the mathematical concepts and procedures needed to solve a problem or complete a task; may offer alternative methods applies relevant mathematical concepts and skills accurately and efficiently; thorough independently recognizes and uses patterns and relationships involved (e.g., how diameter affects circumference; comparisons of two results); generalizes to other problems
<ul style="list-style-type: none"> structures the task into logical steps; may be inefficient; when asked, can often demonstrate alternative methods makes logical estimates to verify results or solutions 	<ul style="list-style-type: none"> structures the task efficiently; may find a shortcut or offer alternative ways to address the task (e.g., develop an equation or algorithm) makes logical and relatively accurate estimates to verify results or solutions
<ul style="list-style-type: none"> recording and substitutions are accurate, including units and symbols; may include minor errors in calculations 	<ul style="list-style-type: none"> recording, substitutions, and calculations are accurate, including units and symbols
<ul style="list-style-type: none"> work is generally clear and easy to follow constructs required charts, diagrams, or graphs appropriately; these may have minor errors or flaws (e.g., occasional missing labels or dimensions) explains procedures and results logically in own words; uses some mathematical language 	<ul style="list-style-type: none"> work is detailed, clearly labelled, and logically organized constructs required charts, diagrams, or graphs effectively and accurately explains procedures and results logically and thoroughly in own words; uses mathematical language; may include visuals

DATA ANALYSIS

- formulate questions
- select, use, and defend appropriate data collection methods
- design and use surveys
- select, use, and defend appropriate data display methods
- analyze and draw conclusions from displayed data
- describe central tendency and variability
- compare central tendency of data sets
- identify bias

MEASUREMENT

- Pythagorean relationship
- area of squares, triangles, parallelograms, trapezoids, circles
- surface area and volume of right prisms and cylinders
- area of composite 2-D shapes
- surface area and volume of composite 3-D objects

OTHER APPLICATIONS OF SHAPE AND SPACE

- scale diagrams
- enlargements and reductions
- network problems
- construct 3-D objects from a variety of representations
- mathematics in 2-D designs

Sample 1: Analyzing Magazine Advertisements (Data Analysis)

CONTEXT

This activity was part of a unit on data analysis. Students had prior instruction and practice in making and interpreting circle graphs.

MATHEMATICAL CONCEPTS

- ◆ select and use appropriate data collection methods
- ◆ construct a circle graph
- ◆ analyze and draw conclusions from displayed data

PROCESS

The teacher led a whole-class discussion about ways of categorizing magazines and what types of advertising they might expect to find in each category of magazine. Students then worked individually to tally ads, construct circle graphs, and analyze their results. They were asked to:

- ◆ choose a magazine
- ◆ describe the likely reader in terms of age, gender, interests, and so on
- ◆ identify the types of advertisements found (e.g., beauty, personal hygiene)
- ◆ tally the number of each type of advertisement and the percentage of the total it represented
- ◆ construct a circle graph
- ◆ post their circle graphs on the classroom wall by type of magazine
- ◆ make observations based on the posted circle graphs
- ◆ draw conclusions about advertising based on their observations and analyses
- ◆ as one extension, suggest alternative ways to investigate magazine advertising
- ◆ as another extension, answer questions related to the reliability of data (e.g., Would results vary if a different method of data collection was used? Would you expect results to be similar from month to month?)

NOTE:

In the following examples, students used colour coding in their graphs. This is not always easy to see in the reproduction.

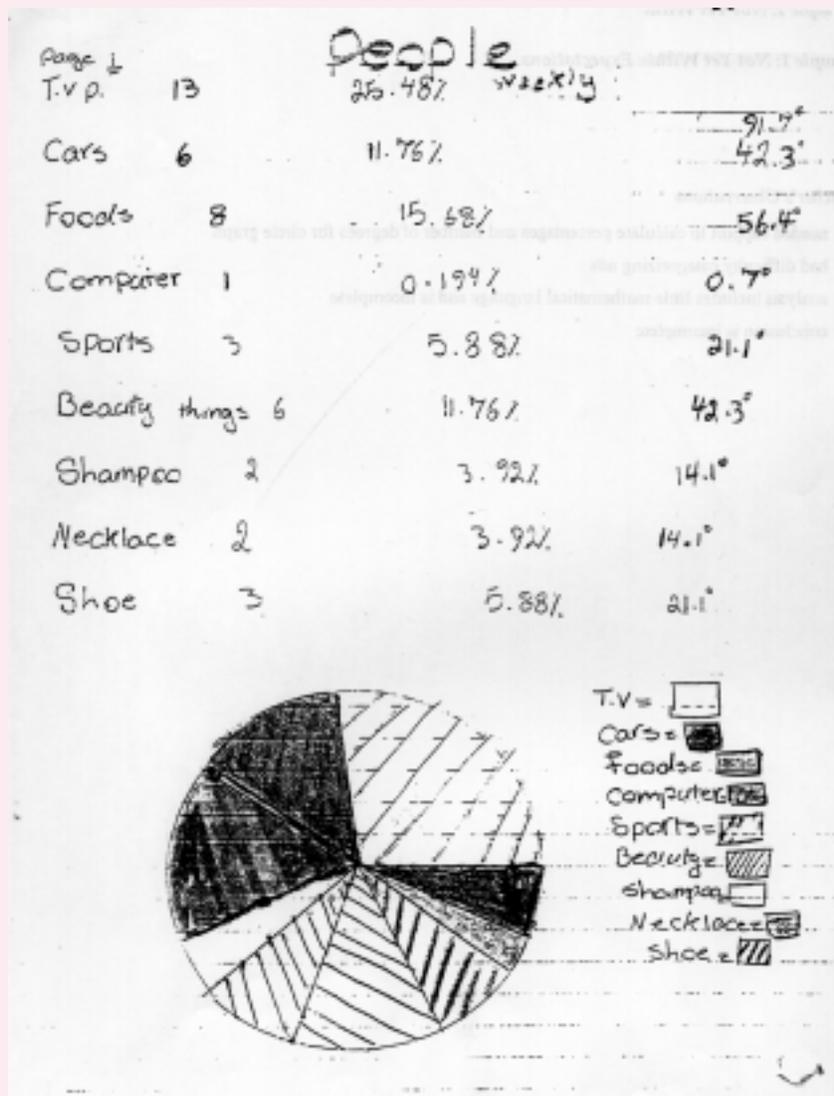
NOT YET WITHIN EXPECTATIONS

Teacher's Observations

This student needed ongoing help from the teacher to calculate percentage and the number of degrees for each category in the circle graph. The analysis is incomplete.

- ◆ unable to identify mathematical concepts or procedures needed
- ◆ unable to recognize basic patterns or relationships
- ◆ unsystematic and inefficient
- ◆ explanation is incomplete

	Not Yet	Meets	Fully	Exceeds
SNAPSHOT				
CONCEPTS				
STRATEGIES				
ACCURACY				
REPRESENTATION				



Page 2

People

T.V = The ads in this ^{weekly} Magazine was about

T.V programs like chanel abc on fridays at

8:30 the Sabrina the Teenage witch is on

Cars = In this magazine it tell you about ^{the} kind
of cars for example ⊕ Toyota

Foods = By food I mean the drinks the dinner

or even Ice cream in the ad of this magazine

Computer = In ^{ad of} this ^{Magazine} it tells you about the kind
of computers ^{of the}

Sports = what I mean by sports I mean it has

different sports in ads.

Beauty things = like bodywash ; perfume and
make-up.

shampoo = By shampoo I mean what we wash our
head with.

Necklace = is a neck lace

shoe = shoe is just shoe.

The numbers that I put in front of ads are the
number of ads and I got the % when

Page 3

Teen group

In the magazines for the teen group in one magazine the biggest number of ads were the book ads. In the other magazine the biggest number of ads were make-up ads. The two other magazines had the same biggest number of ads. In both of them, it was personal hygiene ads.

Hot Rod
Denny's most were car ads and Kent's magazine were almost the same ads. Most were car ads. The other magazine weren't the same ads. For example the other Hot Rod Magazine didn't had that much ads for cars it had smoking for biggest ad.

I think these magazine is for everyone.

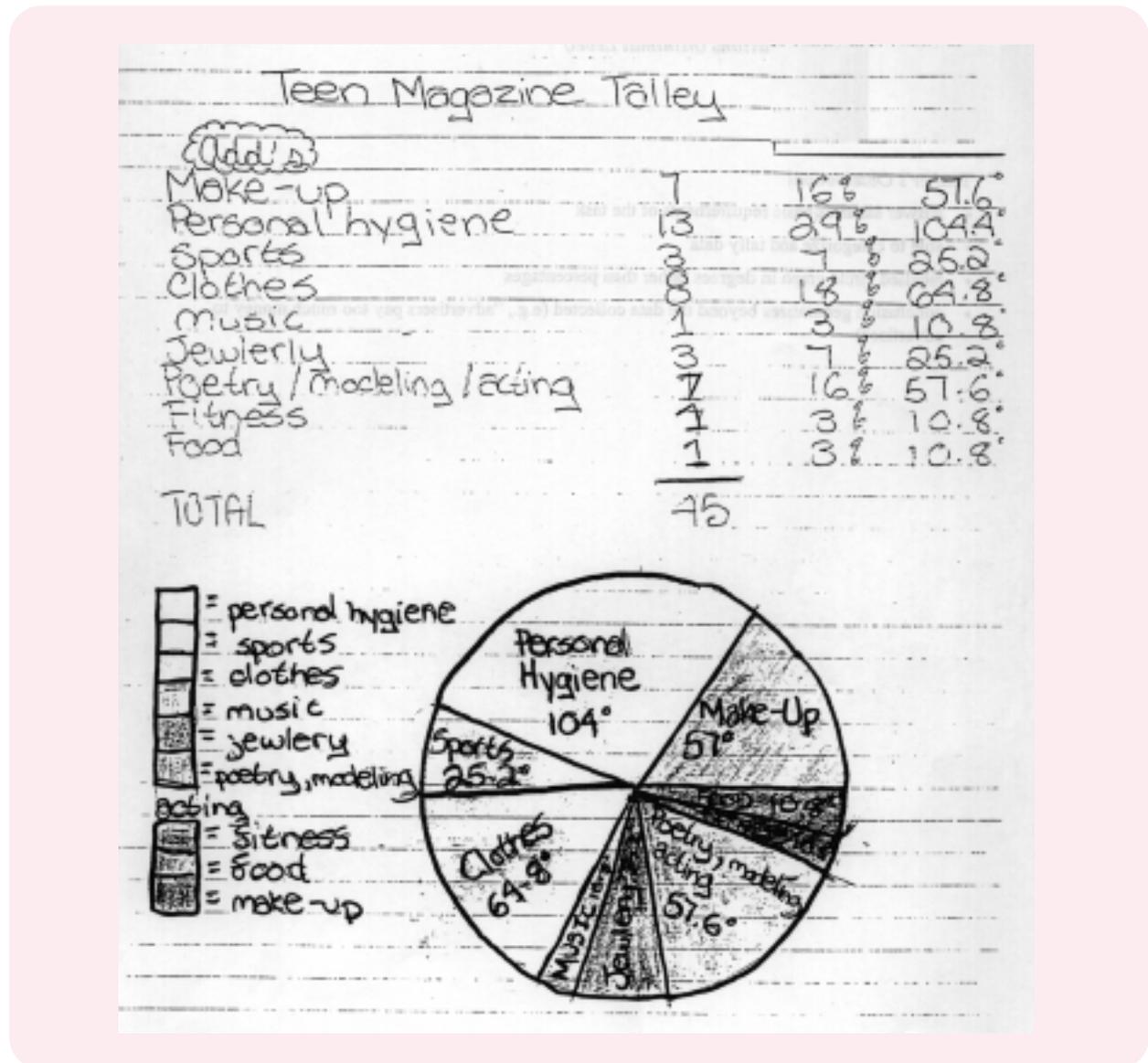
MEETS EXPECTATIONS (MINIMAL LEVEL)

Teacher's Observations

This work satisfies basic requirements of the task, but the graph is untidy and the analysis generalizes beyond the data.

- ◆ applies most relevant mathematical concepts and skills appropriately
- ◆ generally follows specified instructions
- ◆ most work is clear; missing labels or headings, and confusing in places
- ◆ constructs required charts and graphs, but some features are inappropriate, inaccurate, or incomplete (e.g., labelled circle graph in degrees rather than percentages)

	Not Yet	Meets	Fully	Exceeds
SNAPSHOT				
CONCEPTS				
STRATEGIES				
ACCURACY				
REPRESENTATION				



Teen Magazine ▽

Responses to #1, #5, #6

- ① The subscriber to Teen magazine would be a female aged 12-16. The female would be interested in guys, super stars, hollywood, clothes, make-up, every day problems, & personal hygiene.
- ⑤ Some important things I observed are in each section of different magazine groups the ads were all very similar. But if u compare two different groups like Teen & Hotrod, they are very different. Teen has ads about guys & make-up, where as Hotrod has ads on car parts, food, beer, & ciggerettes. I also noticed that the same company produced several different ads of the same product in one magazine.
- ⑥ Some conclusions I can make about advertising after doing this project is that there are certain types of ads geared for certain types of magazines & there subscribers. I also know that advertisers pay too much money to advertise, & there are way too many ads in magazines today.

Teen Magazine

Advertisement Calculations: Percent

Make-up	$7 \div 45 = \frac{7}{45}$	$\times 100 = 16\%$
Personal Hygiene	$13 \div 45 = \frac{13}{45}$	$\times 100 = 29\%$
Sports	$3 \div 45 = \frac{3}{45}$	$\times 100 = 7\%$
Clothes	$8 \div 45 = \frac{8}{45}$	$\times 100 = 18\%$
Music	$1 \div 45 = \frac{1}{45}$	$\times 100 = 3\%$
Jewelry	$3 \div 45 = \frac{3}{45}$	$\times 100 = 7\%$
Photo/Modeling/Acting	$7 \div 45 = \frac{7}{45}$	$\times 100 = 16\%$
Fitness	$1 \div 45 = \frac{1}{45}$	$\times 100 = 3\%$
Food	$1 \div 45 = \frac{1}{45}$	$\times 100 = 3\%$

Total 45 Degrees \downarrow 100%

Make-up	$16\% \times 3.6 = 57.6^\circ$
Personal Hygiene	$29\% \times 3.6 = 104.4^\circ$
Sports	$7\% \times 3.6 = 25.2^\circ$
Clothes	$18\% \times 3.6 = 64.8^\circ$
Music	$3\% \times 3.6 = 10.8^\circ$
Jewelry	$7\% \times 3.6 = 25.2^\circ$
Photo/Modeling/Acting	$16\% \times 3.6 = 57.6^\circ$
Fitness	$3\% \times 3.6 = 10.8^\circ$
Food	$3\% \times 3.6 = 10.8^\circ$

TOTAL $100\% \times 3.6 = 360^\circ$

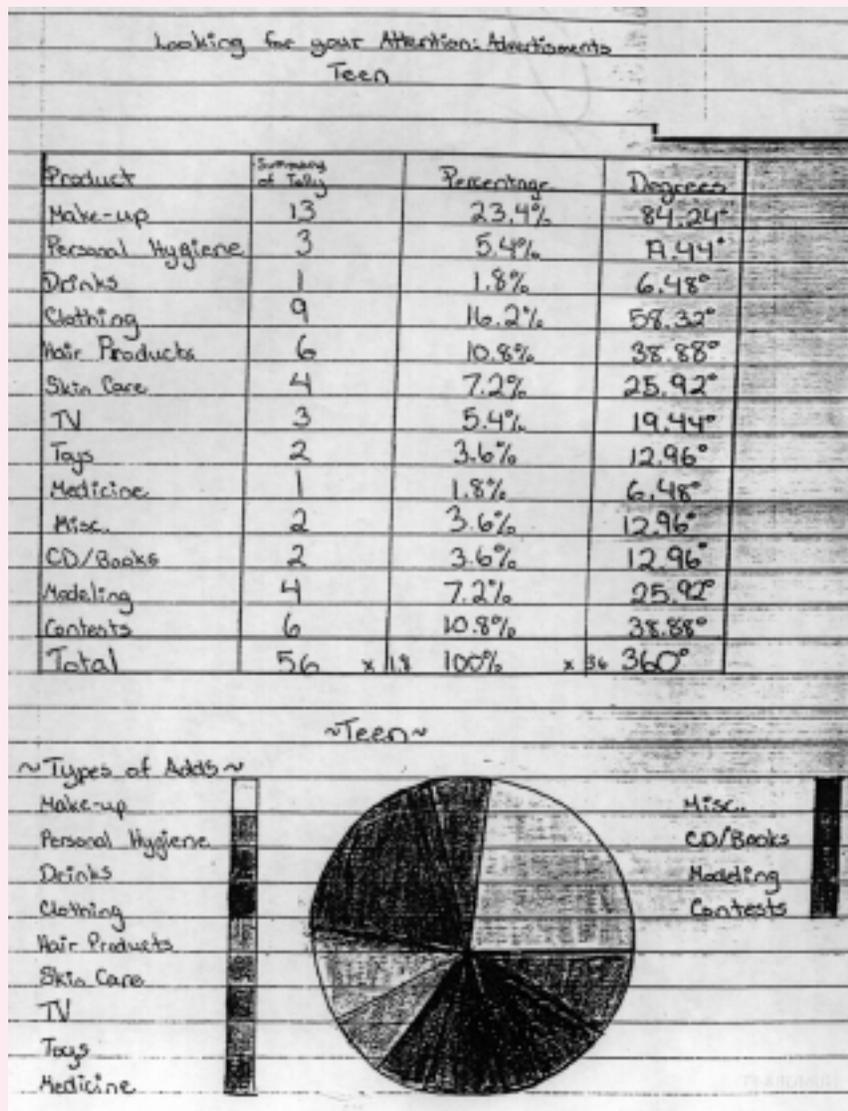
FULLY MEETS EXPECTATIONS

Teacher's Observations

The work is accurate and complete, satisfying all basic requirements of the task. The analysis is logical and detailed.

- ◆ applies relevant mathematical concepts and skills appropriately
- ◆ structures the task into logical steps
- ◆ recording, substitutions, and calculations are accurate
- ◆ work is generally clear and easy to follow
- ◆ constructs required graphs appropriately; has minor errors or flaws

	Not Yet	Meets	Fully	Exceeds
SNAPSHOT				
CONCEPTS				
STRATEGIES				
ACCURACY				
REPRESENTATION				



1. The magazine I chose is Teen. The most likely person to buy this magazine is a teenage girl ages 12-16 or so. She would most likely be interested in fashion and make-up and that sort of things. She would most likely be very concerned about how she looks as well.

5. Some things that I saw that was almost the same in all Teen or YM magazines was that clothing and make-up were one of the top three categories. They usually didn't have much or any advertising on sports unlike sports magazines. Sports magazines usually had mostly advertising for sports or sports brands of clothing and nothing about make-up or modeling like Teen or YM. I also noticed that if you compared the different categories from two types of magazines they would be very different. The main types of advertisements in a sports magazine are about sports or sports brands or equipment. In a magazine like Hot Rod or Dirt Bike there were mainly advertisements for vehicle parts or food. Obviously this is much different than sports advertisements.

6. Some conclusions I can make about advertising after doing this project is that companies gear their ads for certain age groups and types of people. They are also particular about which magazine their ads go into. They wouldn't put an ad for tires in a YM magazine. I also think that there is too much advertising in a magazine. There is sometimes two ads for the same type of clothing right after each other. Then there might be two more of the same thing throughout the magazine as well.

Advertisement Information

The brands included under the category make-up are Cover Girl, Revlon Street Wear, Fetish, Sally, Bonne Bell, Jane, Navy Perfume, and Maybelline. The brands included in personal Hygiene are Always, Secret and Tampax. The brand included in drinks is Coke. The brands included in clothing are Fashion Bug, cords, Zoe, Delia's and Unionbay. The brands included in the category hair products are Freeman, Finesse, Pantene, Salon Selectives, ^{Aussie} and the brands under skin care are Sea Breeze, Liquid Neutrogena, Clean and Clear and Clearasil. The brands under TV are Sweet Valley High and ABC. The brands under Toys is Virtual Pets. The brand under the category medicine is Advil. The brands under Music are Johnson and Collins Inc. and Poems and Lyrics. The brands under CD/Books are Backstreet Boys and Cricken Soup. The brands under Modeling are John Robert Powers and Barbizon. The brands under contests are The Cover Model Search, Poetry Contest and a book contest.

Calculation of Degrees and Percentages

I found the percentages of the number of adds by multiplying the number of adds by 1.8. eg. $6 \times 1.8 = 10.8\%$
To find the degrees of each percentage I multiplied the percentage number by 3.6. eg. $7.2\% \times 3.6 = 25.92^\circ$. This is how I got all the answers for the degrees and percentages.

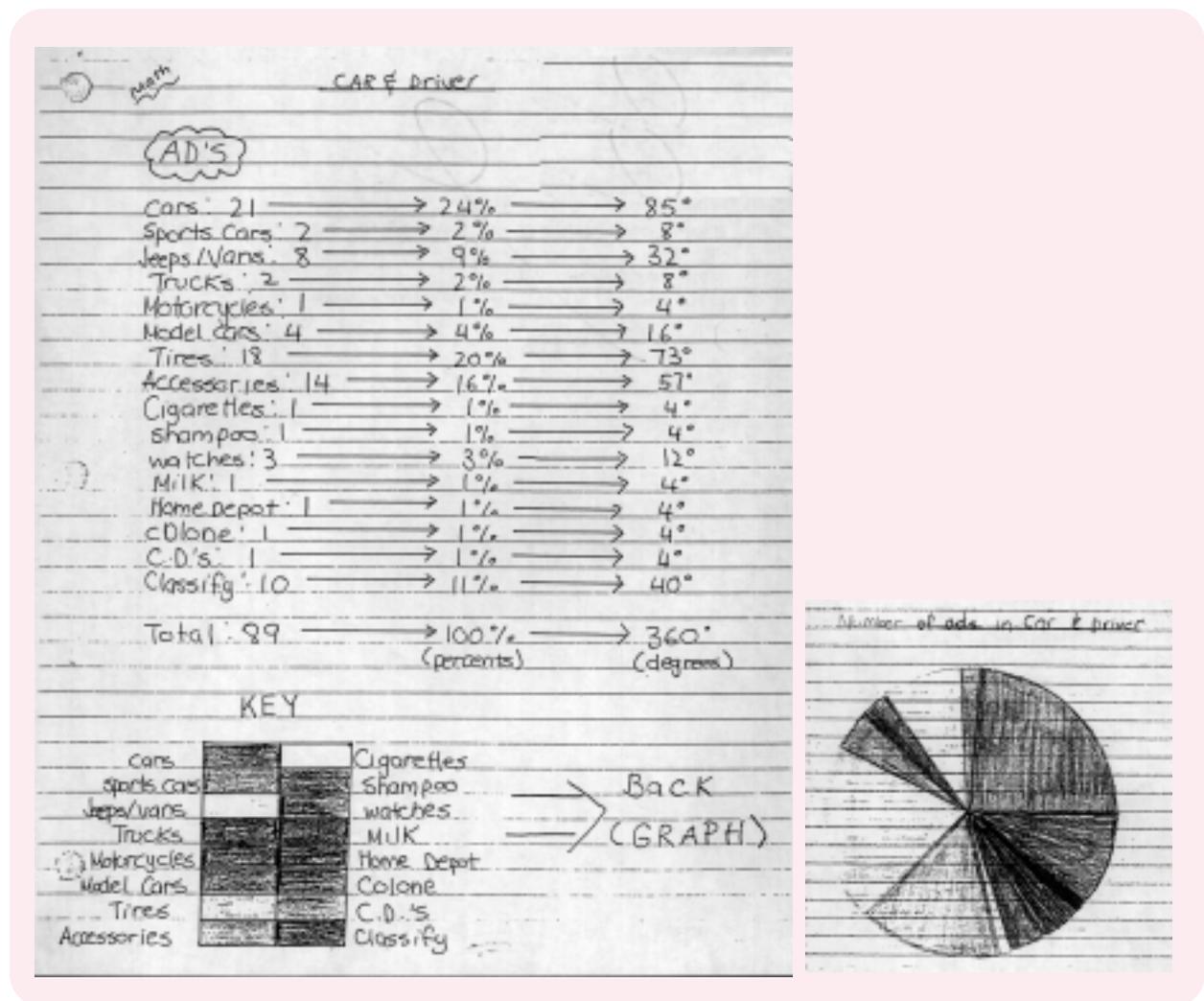
EXCEEDS EXPECTATIONS

Teacher's Observations

The work is thorough and accurate, and it includes some insightful analysis. The conclusion is relevant to the task and based on sound mathematical reasoning.

- ◆ applies relevant mathematical concepts and skills accurately and efficiently; thorough
- ◆ independently recognizes and uses patterns and relationships (e.g., teen magazine graphs were the most similar)
- ◆ recording, substitutions, and calculations are accurate, including units and symbols
- ◆ constructs required graphs effectively and accurately
- ◆ explains procedures and results logically and thoroughly

	Not Yet	Meets	Fully	Exceeds
SNAPSHOT				
CONCEPTS				
STRATEGIES				
ACCURACY				
REPRESENTATION				



Math

CAR & DRIVER

Calculations

To get the percent for each, I divided number of ads for each group by total number of ads. Then I times it by 100 and I get the percent. Now, to get to the degrees, I divided number of ads for each group by total number of ads. Then I times it by 360 and that gave me degrees. It looks like this.

$\frac{\# \text{ of ads for each group}}{\text{total \# of ads}} \rightarrow \text{then times it by } 100$

$\frac{\# \text{ of ads for each group}}{\text{total \# of ads}} \rightarrow \text{then times it by } 360$

When you add up all the percents, they won't equal to 100% perfectly. They equal to 98% because I rounded them up. Same for the degrees. They equal to 359° instead of 360°.

Ad's

Cars: 21 $\rightarrow 21 \div 89 \times 100 = 24\% \rightarrow 21 \div 89 \times 360 = 85^\circ$
Sports cars: 2 $\rightarrow 2 \div 89 \times 100 = 2\% \rightarrow 2 \div 89 \times 360 = 8^\circ$
Jeeps/vans: 8 $\rightarrow 8 \div 89 \times 100 = 9\% \rightarrow 8 \div 89 \times 360 = 32^\circ$
Trucks: 2 $\rightarrow 2 \div 89 \times 100 = 2\% \rightarrow 2 \div 89 \times 360 = 8^\circ$

Math

Responses #1, #5, #6

#1 My magazine is called Car & Driver, I chose it because I love cars. I don't think age matters for this magazine because everyone could love cars. Heck, who doesn't? Most people dream is to have their dream car. They could be sports cars, jeeps, vans, hot rods, even their imagination car. I don't think sex also matters for it because I've seen women's who loves car than some men, and I've seen some men who loves car more than men. But I would prefer more for guys. I think people like mechanics, engineers, car dealers, auto racers, car collectors, and also a car fan like me would especially love this magazine because this magazine tells you lots of information about cars, ads, articles. I would I would recommend this magazine to people who's looking for a car because this magazine tells you about variety of cars.

#5 My group: cars & dirt bikes & hot rods.

observation: They all looked alike. Mine and Kenneth's looked real similar. Ivan and Kevin's looked real simple.

Motorcycles: 1 $\rightarrow 1 \div 89 \times 100 = 1\% \rightarrow 1 \div 89 \times 360 = 4^\circ$
 Model cars: 4 $\rightarrow 4 \div 89 \times 100 = 4\% \rightarrow 4 \div 89 \times 360 = 16^\circ$
 Tires: 18 $\rightarrow 18 \div 89 \times 100 = 20\% \rightarrow 18 \div 89 \times 360 = 73^\circ$
 Accessories: 14 $\rightarrow 14 \div 89 \times 100 = 16\% \rightarrow 14 \div 89 \times 360 = 57^\circ$
 Cigarettes: 1 $\rightarrow 1 \div 89 \times 100 = 1\% \rightarrow 1 \div 89 \times 360 = 4^\circ$
 Shampoo: 1 $\rightarrow 1 \div 89 \times 100 = 1\% \rightarrow 1 \div 89 \times 360 = 4^\circ$
 watches: 3 $\rightarrow 3 \div 89 \times 100 = 3\% \rightarrow 3 \div 89 \times 360 = 12^\circ$
 Milk: 1 $\rightarrow 1 \div 89 \times 100 = 1\% \rightarrow 1 \div 89 \times 360 = 4^\circ$
 Home Depot: 1 $\rightarrow 1 \div 89 \times 100 = 1\% \rightarrow 1 \div 89 \times 360 = 4^\circ$
 Colone: 1 $\rightarrow 1 \div 89 \times 100 = 1\% \rightarrow 1 \div 89 \times 360 = 4^\circ$
 C.D.'s: 1 $\rightarrow 1 \div 89 \times 100 = 1\% \rightarrow 1 \div 89 \times 360 = 4^\circ$
 Classify: 10 $\rightarrow 10 \div 89 \times 100 = 11\% \rightarrow 10 \div 89 \times 360 = 40^\circ$

Total: 89	98%	359°
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Advertisement Information

Most of these ads were all related to cars. Duh! It's a car book! But I hope there was more ads not about cars. In the magazine, the car (normal, street) had the most ads. I hope there is more sports car ads because most people like them. Other than that, I loved reading this magazine and I wish to read the next issue.

used pictures instead of colors.

Old ladies & men magazines

Observations: The information for all of them were based on ladies stuff like, make up, fashion, food/cooking, and laundry. They're mostly all drawn instead of colors. The difference between our group and their group is that ours is something to do with machines, like engines, and their has something to do with house keeping like cooking, houses and etc.

The Teen-magazines

Observations: The information they had were mostly about make-ups, fashion, clothing, and beauty. Their groups: graph's half of them were pictures and half of them were colors. I think our group and their group don't go together at all. Like, our group were about " " " " and their's are about teenagers.

Sports-magazines

observations: Their ads were all different.

variety's. Basically, everything. I think our group could be similar to this group because cars are part of a sport and I saw a car ad in one of their graphs. When I flip through sports magazines, I see lots of car ads, so I think their group and our group is similar.

Entertainment - magazines.

observations' Their groups graphs had all different ads. But their graphs didn't have a car ad so I don't think our group has something to do with this group. Their group told lots about Nintendo games. Their group graphs looked all different as well. The difference between our group and their group is that our group's about " " " " and their group's about everything about entertainment.

Conclusion

The thing that I noticed the most after doing this activity is that there was more people in the Teen-magazine group and they had lots of ads. I think our group's graph were most similar which means our magazine had similar ads. I really enjoyed this activity because it gave me a chance to watch a magazine while doing work!

Sample 2 : Currency Conversions (Money)

CONTEXT

Students had previous instruction and practice in number operations with decimals and percentages and rates and ratio.

MATHEMATICAL CONCEPTS

- ◆ calculate using rate
- ◆ estimate to verify results
- ◆ construct a display

PROCESS

After discussing currency and exchange, students worked in groups to:

- ◆ choose five items
- ◆ find the cost of each in Canadian currency
- ◆ choose other countries whose currencies they would research (one per group member)

Each group member then worked independently to:

- ◆ identify the name of one currency and its symbol (e.g., Britain: pound, £)
- ◆ find the current exchange rate and record the source and date
- ◆ calculate the cost of each item in the chosen currency
- ◆ create a visual display
- ◆ explain in writing how and to whom this information might be useful

To demonstrate that they had exceeded expectations for this grade level, students were encouraged to complete the following extension:

- ◆ find the cost of an item in another currency (e.g., cost in Hong Kong, in Hong Kong dollars, of a calculator)
- ◆ convert the cost to Canadian dollars
- ◆ research to find the cost of the same item in Canada
- ◆ compare the costs
- ◆ visually represent the comparison
- ◆ explain what factors might contribute to similarities or differences in cost

No formats or procedures were suggested. Students were allowed to consult others in their groups and to use calculators, computers, and print resources. Some submissions were completed as a group; some independently.

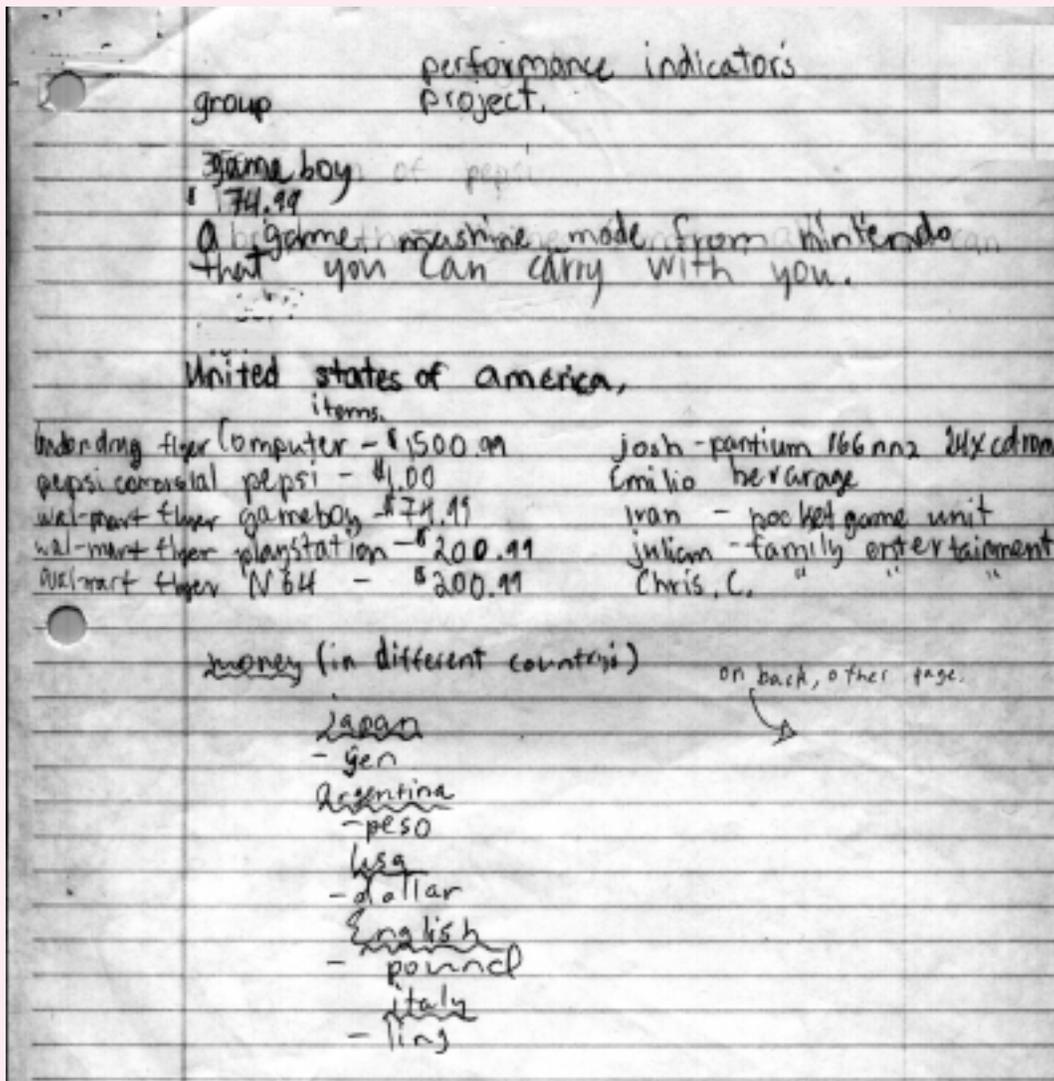
NOT YET WITHIN EXPECTATIONS

Teacher's Observations

This work is confusing and inaccurate. The wrong operation was chosen—multiplication instead of division.

- ◆ unable to identify mathematical concepts or procedures needed
- ◆ appears unsystematic and inefficient
- ◆ major errors in recording and calculations, including inconsistent use of symbols (for currency)
- ◆ work is confusing and presented in an inconsistent format; key information is omitted

	Not Yet	Meets	Fully	Exceeds
SNAPSHOT				
CONCEPTS				
STRATEGIES				
ACCURACY				
REPRESENTATION				



gameboy

1.)



2.) \$74.99 in Canada.

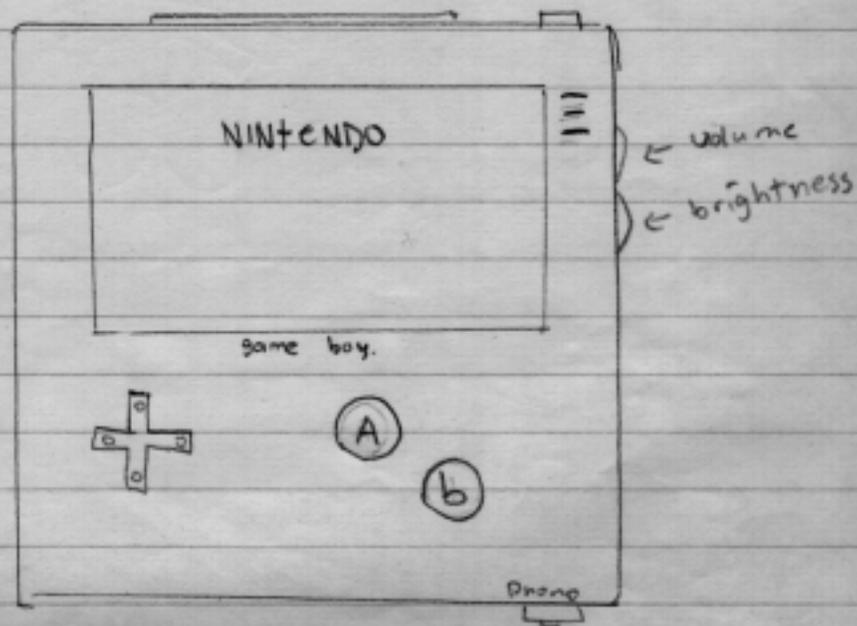
- 3.) cost in Usa = \$51.75
 cost in argentina = \$98.75
 cost in japan = \$1.80
 cost in Italy = ~~90705.75~~
 cost in England = \$179.25

calculations

X by the normal cost.	playstation	apple	pepsi	computer	gameboy
\$1.31	argentina = 262	262	\$1.31	\$965.01	\$98.75
\$0.0240	japan = 4.80	4.80	2	\$36	\$1.80
\$2.39	England = 475.61	475.61	\$2.39	\$3886.97	\$179.25
\$1,209.41	Italy = 241869.90	241869.90	\$1,209.41	\$1572220.90	\$90705.75
\$0.69	Usa = 137.99	137.99	\$0.69	\$0.69	\$51.75

question = gameboy, you can carry it around the world and play games, you can play without plugging it in, to input. It's a fun game machine with over 50 games.

display.



game boy made by nintendo, 8 bits, has a phone that you can plug in, it has volume, and brightness, the buttons are a, b, game plug in at the back.

gameboy cost in different countries.

cost = usa = \$51.75

Italy = \$90705.75

argentina = \$98.75

England = \$179.25

japan = \$1.80.

MEETS EXPECTATIONS (MINIMAL LEVEL)

Teacher's Observations

This work shows basic understanding of simple currency conversions and satisfies most requirements of the task.

- ◆ identifies most mathematical concepts and procedures needed
- ◆ applies most relevant mathematical concepts and skills appropriately; some errors and omissions
- ◆ generally follows specified instructions and procedures
- ◆ most work is clear and easy to follow

	Not Yet	Meets	Fully	Exceeds
<i>SNAPSHOT</i>				
CONCEPTS				
STRATEGIES				
ACCURACY				
REPRESENTATION				

NOTE:

Each student in this group of three submitted a poster similar to the one shown as a sample. The posters were 44 cm X 28 cm in size, on colourful paper. They featured pictures of products cut from advertisements and word-processed text glued into place. For copyright reasons, photographs of products included by the student in this example have been faded out.

Date of Exchange Rate: Thursday, May 14, 1998



Cross country style

Down hill style

Mongoose bikes

Symbols:
Uruguay: \$
Botswana: P
Kyrgyzstan: none
Lithuania: none
Azerbaijan: none

Cost: \$1649
Uruguay: \$11 70.90
Botswana: P 4419.32
Kyrgyzstan: 13505.31
Lithuania: 4551.24
Azerbaijan: 4 781 094.10

Sony stereo



Cost: \$1 349
Uruguay: \$ 9 577.90
Botswana: P 3 615.32
Kyrgyzstan: 11 048.31
Lithuania: 3 723.24
Azerbaijan: 3 911 277.10

To find out the currency exchange in other countries you must multiply the Canadian cost by the foreign currency. (per Canadian dollar)

1 CDN Dollar = 7.10 URG Peso
1 CDN Dollar = 2.68 BTW Pula
1 CDN Dollar = 8.19 KGZ Som
1 CDN Dollar = 2.76 LIT Litas
1 CDN Dollar = 2899.39 AZR Manat

Chosen Topics:

Bike: Mongoose NX 7.5 Newman Y-frame style

Stereo: Sony MHC-2750 mini hi-fi component system, auto reverse, dolbi, 2 NR custom file, linear skating, 5 tray mechanism, auto tape, selective sound fixture, field co-ordinator, tape dubbing and 5 disc compatible CD changer.

Source:

Bike: Black Dog Bikes
Internet sites
Royal Bank of Canada

Stereo: Funato Shop
Internet sites
Royal Bank of Canada

This info might be valuable to a traveler, tourist or a bank because they all deal with exchange and exchange rates. This info can be used to calculate the exchange rate. (Example. If you had \$10 CDN and you were travelling to Australia, but you already had \$12, you could figure out the exchange rate by dividing them both by 10 equaling the amount per CDN dollar.)

Find the cost of 1-2 items in another place, in another currency-convert it to CDN funds.

Australia

Item: Music CD
Cost in Australia: \$25.00
Source: Luke Howard
Cost in Canada: \$15.00
\$15.00 divided by \$15.00 = \$1.00 CDN
\$25.00 divided by \$15.00 = \$1.66 AUS
An extra \$0.66 per dollar

This data might be visually represented by a chart or other document. Sixty-six cents extra for 1 CDN dollar because the price range is fairly close

FULLY MEETS EXPECTATIONS

Teacher's Observations

This work satisfies basic requirements of the task and shows sound understanding of the relationship between various currencies. The explanation shows some understanding of the role of currency and exchange rates. There is no extension.

	Not Yet	Meets	Fully	Exceeds
SNAPSHOT				
CONCEPTS				
STRATEGIES				
ACCURACY				
REPRESENTATION				

- ◆ identifies the mathematical concepts and procedures needed
- ◆ structures the task into logical steps
- ◆ recording, substitutions, and calculations are accurate, including units and symbols
- ◆ work is generally clear and easy to follow
- ◆ explains procedures and results logically

Currency Exchange

Playstation - toys r us
video games system, cd, s-d
Cnd - \$199.99
 $199.99 \times .93 = 185.99$
¥ 185.99 (yen)

nike soccer shirt - champs
black & white, nike swoosh
Cnd - \$24.99
 $24.99 \times .93 = 23.24$
¥ 23.24 (yen)

tequila - liquor store
bottle, 40 oz alcohol
Cnd - \$16.50
 $16.50 \times .93 = 15.34$
¥ 15.34 (yen)

Nike Athletic shoes - planet superstar
black & white
Cnd - \$140
 $140 \times .93 = 130.20$
¥ 130.20 (yen)

pepsi - hilltop
bottle of pop - 600 ml
Cnd - \$1.09
 $1.09 \times .93 = 1.01$
¥ 1.01 (yen)

Currency Exchange
Individual Activity

- 1) the name of my country is Japan.
- 2) the currency of Japan is yen
- 3) the symbol for yen is ¥
- 4) the exchange rate from canada to Japan is .93
- 5) My source of information is the vancouver sun.
date - May 13.
- 6) I multiply the items price by .93 which thus gives me the answer.

playstation cnd \$199.99
Jpn ¥185.99
Mex \$959.29
Eng £83.26
Arg \$153.66

nike shoes cnd \$140.00
Jpn ¥130.80
Eng £158.57
Mex \$671.96
arg \$106.87

nike t-shirt cnd \$29.99
Jpn ¥25.24
Eng £10.45
Mex \$199.76
arg \$19.08

tequila cnd \$16.50
Jpn ¥15.34
Eng £6.90
Mex \$19.14
arg \$12.59

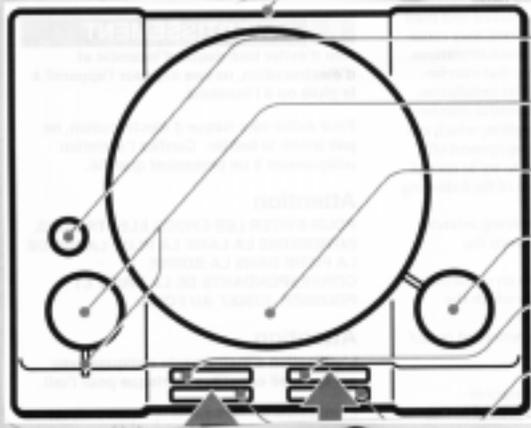
pepsi cnd \$1.09
Jpn ¥1.01
Eng £6.20
Mex \$5.23
arg \$0.33

questions

The information learned in this lesson can be useful to people who have a business in foreign countries and also people who have money that is from a foreign country. This information can become very useful. It can be used while shopping and in large businesses.

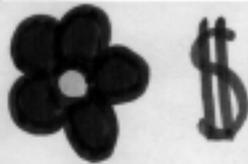
- 1) This data can be visually represented by a bar graph. Each graph can represent each country.
- 2) Each country may change currencies depending on how it's society's life is doing.
ex. gold's value can change.

Playstation



toys r us.
wed, May 13

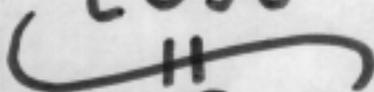
local
cost



=



299.99.



Cnd



source:
Vancouver
BUN

England
199.99

£83.26 pounds

Japan
 $199.99 \times .93$
 $= 185.99$
 ¥ 185.99 (yen)

Mexico
 $199.99 \div .2083$
 \$959.29 peso

Argentina
 $199.99 \div 1.31$
 $= \$152.66$

EXCEEDS EXPECTATIONS

Teacher's Observations

This work is thorough, accurate, and insightful, and it shows a sound understanding of currency exchange. There is an extension, additional analysis, and suggestions for effective ways to display the information.

- ◆ applies relevant mathematical concepts and skills accurately and efficiently; thorough
- ◆ structures the task efficiently
- ◆ recording, substitutions, and calculations are accurate, including units and symbols
- ◆ work is detailed, clearly labelled, and logically organized
- ◆ explains procedures and results logically and thoroughly; includes visuals

NOTE:

Each student in this group of five contributed to a neatly presented 13-page booklet. Each student's work followed a consistent outline. Some pages featured pictures of products cut from advertisements. The sample shows the contributions of one student to the booklet. For copyright reasons, photographs of products included by the student in this example have been faded out.

	Not Yet	Meets	Fully	Exceeds
SNAPSHOT				
CONCEPTS				
STRATEGIES				
ACCURACY				
REPRESENTATION				

DESCRIPTIONS OF PRODUCTS IN CANADA

NAME OF ITEM : RCA 27" Television

COST : \$599.99

DESCRIPTION : Picture in picture, on screen displays, dark tint tube, comb filter, universal remote, input and output jacks and fantastic RCA quality

SOURCE OF INFO : Future Shop flyer

NAME OF ITEM : JVC Kaboom CD Boombox

COST : \$397.99

DESCRIPTION : 52 watts, twin 16 cm super woofer, auto reverse cassette and remote control

SOURCE OF INFO : Future Shop flyer

NAME OF ITEM : Nike Air Turf Shark

COST : \$69.00

DESCRIPTION : Black and white running shoes

SOURCE OF INFO : Sportmart flyer

NAME OF ITEM : YM Magazine

COST : \$3.25

DESCRIPTION : about 100 pages full of interesting and funny stories and articles

SOURCE OF INFO : YM Magazine

NAME OF ITEM : Western family pickles

COST : \$3.48

DESCRIPTION : baby dills with garlic, bread + butter or whole dills with garlic, 2 Liters

SOURCE OF INFO : Save-on-Foods coupon book

CURRENCY EXCHANGE

NAME:

COUNTRY SELECTED: Germany

NAME OF CURRENCY: Marks

SYMBOL OF CURRENCY: GM

EXCHANGE RATE: \$1.00 Canadian = 1.231 German Marks

SOURCE AND DATE OF EXCHANGE RATE: Internet, May 14, 1998

\$1.00 CANADIAN = 1.231 German Marks

COST OF STEREO x EXCHANGE RATE = COST OF STEREO IN MARKS

$\$397.99 \times 1.231 \text{ Marks} = 489.93 \text{ Marks}$

\$1.00 Canadian = 1.231 German Marks

COST OF TELEVISION x EXCHANGE RATE = COST OF TELEVISION IN MARKS

$\$599.99 \times 1.231 \text{ Marks} = 738.59 \text{ Marks}$

\$1.00 Canadian = 1.231 German Marks

COST OF SHOES x EXCHANGE RATE = COST OF SHOES IN GERMAN MARKS

$\$69.99 \times 1.231 \text{ German Marks} = 86.16 \text{ German Marks}$

\$1.00 Canadian = 1.231 German Marks

COST OF MAGAZINE x EXCHANGE RATE = COST OF MAGAZINE IN GERMAN MARKS

$\$3.25 \times 1.231 = 4.00 \text{ German Marks}$

\$1.00 Canadian = 1.231 German Marks

COST OF PICKLES x EXCHANGE RATE = COST OF PICKLES IN MARKS

$\$3.48 \times 1.231 = \$4.28 \text{ German Marks}$

CURRENCY EXCHANGE



CURRENCY EXCHANGE

CANADIAN COST: \$397.99

\$1.00 = 1.231 German Marks

COST OF STEREO X EXCHANGE RATE = COST OF STEREO IN MARKS
 $\$397.99 \times 1.231 \text{ German Marks} = 489.93 \text{ German Marks}$

\$1.00 = 1210 Italian Lire

COST OF STEREO X EXCHANGE RATE = COST OF STEREO IN LIRE
 $\$397.99 \times 1210 \text{ Italian Lire} = 489, 467.90 \text{ Italian Lire}$

\$1.00 = 0.42351 British Pounds

COST OF STEREO X EXCHANGE RATE = COST OF STEREO IN POUNDS
 $\$397.99 \times 0.42351 \text{ British Pounds} = 168.55 \text{ British Pounds}$

\$1.00 = 23.08

COST OF STEREO X EXCHANGE RATE = COST OF STEREO IN TAIWAN DOLLARS
 $\$397.99 \times 23.08 = 9185.60 \text{ Taiwan Dollars}$

CURRENCY PROJECT

To whom might the information learned in this task be valuable? In what ways can this information be used?

This information is valuable to travelers so they know how much Canadian money to exchange when they go on a trip to a different country. It would also be valuable to bankers and the people that exchange money for people. This is because if someone asks how much lire they are going to get from \$100 Canadian, then the banker or the money exchanger could at least give a rough estimate of how much lire that is without looking it up. This would also be important to sellers because if they were selling goods to another person in another country, then the seller would have to know how much the product that they are selling is worth in the other country and the cost of it in their currency. Cashiers at stores or restaurants need to know this too because if a customer comes into a store and purchases something in a Canadian store but only has American money, then the cashier would have to know the exchange rate. The cashier has to find out how much American money it would cost to purchase the item .

This information can be used to find out if products like milk is more expensive here or in another country. So in other words, it is used to compare prices of different products in different countries. You would have to change both products to the same currency. Also with this information, you could see if things are a good buy in other countries. For example, if you were in Greece and you wanted to buy a shirt. You can use the exchange rate to find out if the shirt is a good price.

To find the cost of 1-2 items in another place in another currency. Then convert it to Canadian.

ITEM DESCRIPTION : 1 Liter of Homo Milk

COST IN FOREIGN CURRENCY : \$25

PLACE +SOURCE OF INFORMATION : grocery store in Hong Kong +relative from Hong Kong

CALCULATED COST IN CANADIAN CURRENCY :

COST OF MILK IN HONG KONG ÷ EXCHANGE RATE= COST OF MILK IN CANADIAN DOLLARS
 $\$20 \div 5.350 \text{ Hong Kong Dollars} = \$3.74 \text{ Canadian Dollars}$

ITEM DESCRIPTION : 650 grams of whole wheat bread

COST IN FOREIGN CURRENCY : \$10

PLACE +SOURCE OF INFORMATION : grocery store in Hong Kong +relative from Hong Kong

CALCULATED COST IN CANADIAN CURRENCY :

COST OF BREAD IN HONG KONG ÷ EXCHANGE RATE= COST OF BREAD IN CANADIAN DOLLARS

$\$10 \div 5.350 \text{ Hong Kong Dollars} = \$1.87 \text{ Canadian Dollars}$

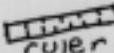
What factors might have contributed to the cost similarities or differences observed?

The factors that might have contributed to the cost similarities and differences are the products could be different qualities. So milk in the other country could be better than it is here. Some countries could be wealthier than others so products could be really expensive if the country was very poor. Also sometimes in places, they don't have the materials to produce something. Like milk for example, in a different country, they might not have very many cows to produce milk so they have to import it. Because it costs money to import stuff, they have to charge more money for the milk so they don't lose any money when they sell the milk.

How might this data be visually represented.

This could be visually represented on a chart or a poster. On the graph you would have the items on the top and the different currencies on the side. On the poster, it will have the picture of 1 or 2 items. On the bottom, there could be a little paragraph of different exchange rates and the cost of the items in the different currencies.

CHART:

PRODUCTS CURRENCIES				
BRITISH POUNDS	COST OF PRODUCTS IN POUNDS			
MEXICAN PESO				
GERMAN MARKS				
JAPANESE YEN				
TAIWAN DOLLAR				

Sample 3: Dream House (Shape and Space, Money)

CONTEXT

Students had completed units on *perimeter and area* and *percentage*.

MATHEMATICAL CONCEPTS

- ◆ calculate area
- ◆ estimate to verify solutions
- ◆ draw scale diagrams
- ◆ explain procedures

PROCESS

The teacher explained that students would be designing their dream houses. The class discussed various resources they could use to help them accomplish the task (e.g., parents, realtors, newspapers, home buyer guides, real estate guides, assessment notices, libraries, the Internet).

The teacher presented the assignment in two sections. In Part 1, students worked individually to determine the size, assessed value, market value, and cost per square metre of a house in their neighbourhood. They submitted house plan footprints (basic floor plan) along with written reports describing the house. Some students chose to describe their own home; others selected a friend's or relative's home. Students were encouraged to discuss the assignment with family members and friends. This part of the assignment was designed to ensure that students would develop the skills and knowledge they needed to complete the "dream house" assignment.

NOTE:

The teacher marked Part 1 of the assignment separately. It is not included as examples of student work for this sample.

After completing the independent assignment, students worked in small groups (some students chose to work independently) to design a dream house. They were given some class time, but did most of the work as homework over several weeks. They were given the following requirements:

- ◆ The dream home should be three times the assessed value of the house you chose for Part 1.

- ◆ The design should include at least a living room, a dining room, a kitchen, a bathroom, three bedrooms, and closet space.

The teacher went over specific requirements and criteria for each section of the assignment, as summarized here.

WRITTEN REPORT

- ◆ value of the dream home
- ◆ dimensions of each room and total living area
- ◆ area of rooms expressed as a percentage of the total living area
- ◆ explanation of the choice of rooms and design
- ◆ description of house and surroundings

FOOTPRINT

- ◆ each room labelled and dimensions indicated
- ◆ drawn to scale of 2 cm = 1m (1:50); indicate scale used and include correct units
- ◆ include legend and use appropriate symbols for walls, windows, and doorways
- ◆ neatly drawn, outlined with a fine-liner

CALCULATIONS

- ◆ area of each room, each floor, and entire house; perimeter of house
- ◆ cost of house in cost per square metre
- ◆ include formulae used, showing substitutions
- ◆ correct units

ENRICHMENT

The teacher provided a variety of options for students who wanted to extend their projects, including calculating interest on a 25-year mortgage at current rates or constructing a 3-D model.

NOT YET WITHIN EXPECTATIONS

Teacher's Observations

The work does not fulfill basic requirements of the task. Several requirements are omitted (e.g., each room as a percentage of total living space; dimensions clearly shown on the diagram). The layout appears careless, with no attempt to minimize hallway or entrance space or to connect rooms in a logical way. The work is untidy.

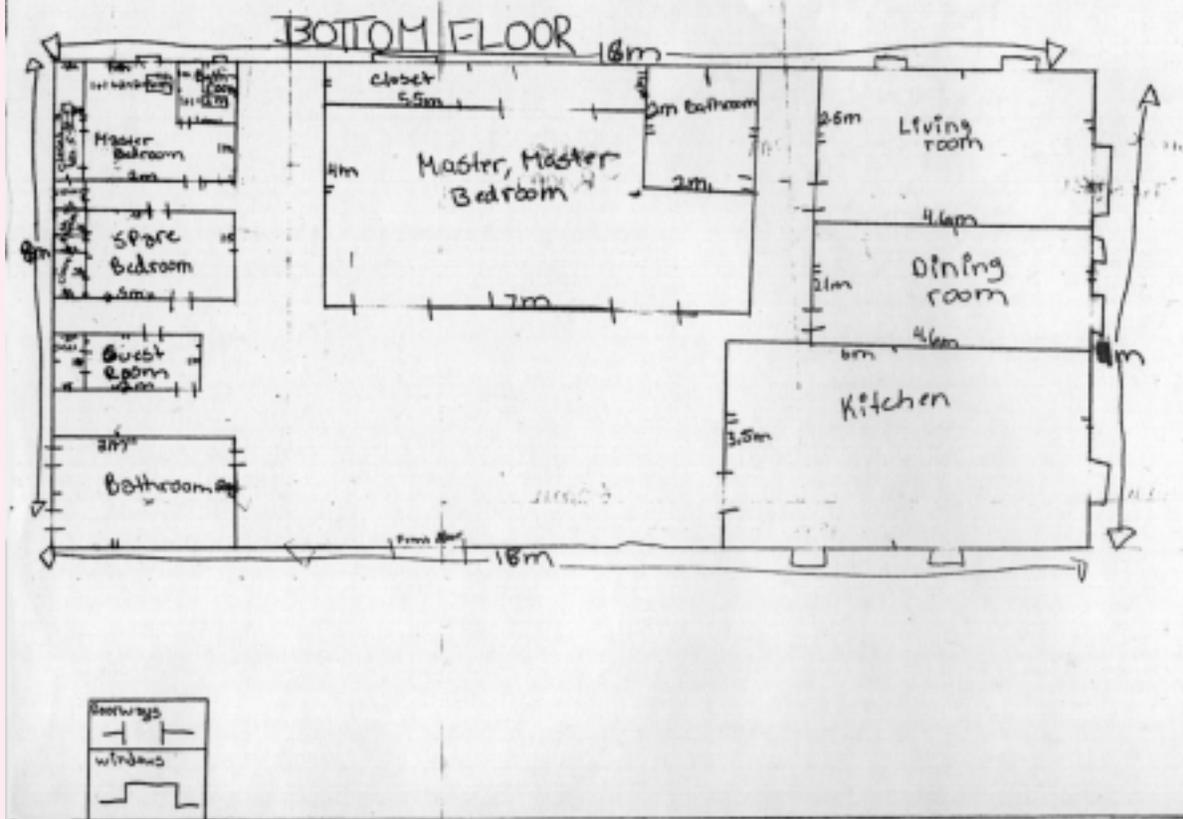
	Not Yet	Meets	Fully	Exceeds
SNAPSHOT				
CONCEPTS				
STRATEGIES				
ACCURACY				
REPRESENTATION				

- ◆ does not apply relevant mathematical concepts and skills appropriately; major omissions
- ◆ appears unsystematic and inefficient
- ◆ required charts, diagrams, or graphs are seriously flawed
- ◆ explanation is incomplete

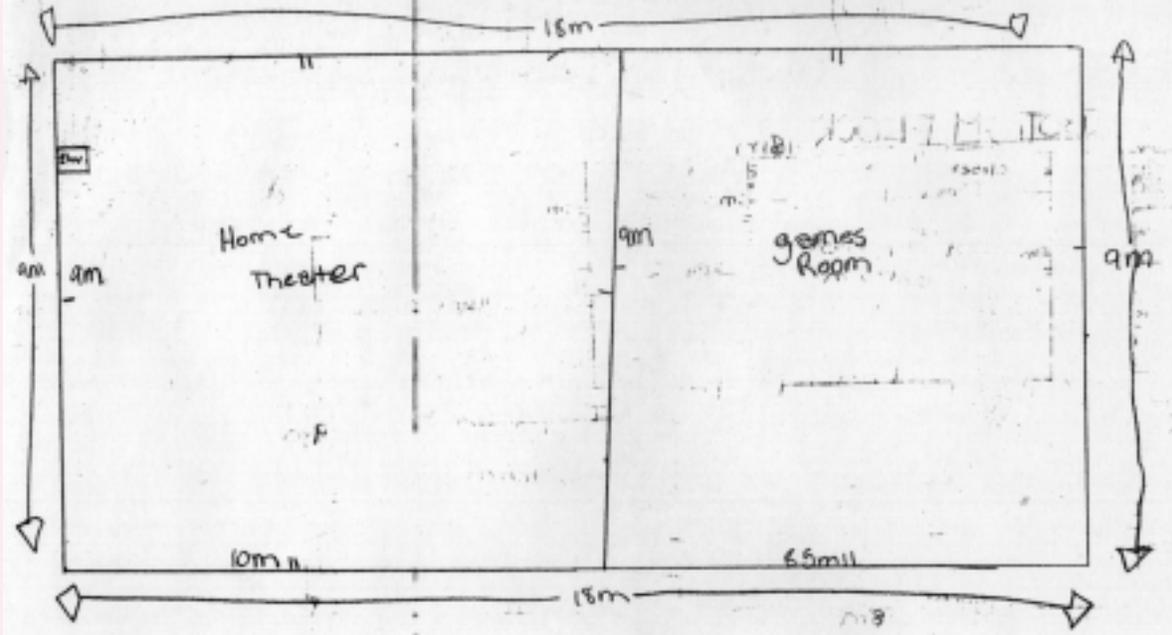
Dream House Write Up

The assessed value of my dream home is 179,700. It consists of a master bedroom of 11m altogether, a bathroom of 4m altogether and a closet of 6m altogether. It has a master bedroom of 6m altogether, a bathroom of 2m altogether and a closet of 2.5m altogether. It has a spare bedroom of 4m altogether, a bathroom of .80m altogether and a closet of .80 m altogether. It has a guest bedroom of 3m altogether, a closet of 1.5m altogether. It has a living room of 7.1m altogether. It has a dining room of 6.7m altogether. It has a kitchen of 9.5m altogether. It also has a bathroom of 5m altogether. All that is on the bottom floor and to get to the top floor you need to the elevator of 2m altogether. On the top floor you have a home theater of 19m altogether and a games room of 17.5m altogether. My dream home is in Honolulu, Hawaii. It is a two story house and looks almost like the white house but also smaller.

DREAM HOUSE FOOTPLAN



TOP FLOOR



MEETS EXPECTATIONS (MINIMAL LEVEL)

Teacher's Observations

The work satisfies most basic requirements of the task. Calculations for area, perimeter, and percentage are accurate. There are some problems with the diagram (e.g., dimensions are expressed in an inconsistent way), several of the room dimensions are not logical, and the dimensions used in calculations are oversimplified.

- ◆ identifies most mathematical concepts and procedures needed; oversimplifies some aspects of the task
- ◆ applies most relevant mathematical concepts and skills appropriately; some errors
- ◆ structures the task into logical steps
- ◆ work is generally clear and easy to follow
- ◆ constructs required diagrams appropriately; has minor errors or flaws

	Not Yet	Meets	Fully	Exceeds
<i>SNAPSHOT</i>				
CONCEPTS				
STRATEGIES				
ACCURACY				
REPRESENTATION				

The stated value of our dream house is \$216000.

Formula for the stated value of the house: Existing house value x 3
= stated value

$$72000 \times 3 = \boxed{\$216000}$$

Formula for the percent of each room: $\frac{\text{Area of room}}{\text{Total area of house}}$

$$\text{TV Room is } 14 \text{ m}^2 \div 410 \text{ m}^2 = \boxed{3.4\%}$$

$$\text{Theater is } 16 \text{ m}^2 \div 410 \text{ m}^2 = \boxed{3.9\%}$$

$$\text{Gym is } 24 \text{ m}^2 \div 410 \text{ m}^2 = \boxed{5.85\%}$$

$$\text{Kitchen is } 12 \text{ m}^2 \div 410 \text{ m}^2 = \boxed{2.9\%}$$

$$\text{Bedroom \# 1 is } 7 \text{ m}^2 \div 410 \text{ m}^2 = \boxed{1.7\%}$$

$$\text{Bedroom \# 2 is } 7 \text{ m}^2 \div 410 \text{ m}^2 = \boxed{1.7\%}$$

$$\text{Ensuite is } 3 \text{ m}^2 \div 410 \text{ m}^2 = \boxed{0.73\%}$$

$$\text{Bathroom \# 1 is } 2 \text{ m}^2 \div 410 \text{ m}^2 = \boxed{0.48\%}$$

$$\text{Bathroom \# 2 is } 2 \text{ m}^2 \div 410 \text{ m}^2 = \boxed{0.48\%}$$

$$\text{Lazer tag is } 21 \text{ m}^2 \div 410 \text{ m}^2 = \boxed{5.1\%}$$

$$\text{Sitting room is } 7 \text{ m}^2 \div 410 \text{ m}^2 = \boxed{1.7\%}$$

$$\text{Dining room is } 8 \text{ m}^2 \div 410 \text{ m}^2 = \boxed{1.95\%}$$

$$\text{Laundry room is } 2 \text{ m}^2 \div 410 \text{ m}^2 = \boxed{0.48\%}$$

$$\text{Jacuzzi is } 9 \text{ m}^2 \div 410 \text{ m}^2 = \boxed{2.3\%}$$

$$\text{Snack bar is } 1 \text{ m}^2 \div 410 \text{ m}^2 = \boxed{0.24\%}$$

$$\text{living room is } 2.5 \text{ m}^2 \div 410 \text{ m}^2 = \boxed{3\%}$$

$$\text{Guest bedroom is } 14 \text{ m}^2 \div 410 \text{ m}^2 = \boxed{3.8\%}$$

$$\text{Master bedroom is } 14 \text{ m}^2 \div 410 \text{ m}^2 = \boxed{3.4\%}$$

We put a deck on the second floor of our dream house so you can sun tan and look at the ocean. We also added a two car garage so you can park your cars inside.

We designed it like a beach house with lots of big windows and facing the ocean because it is a water front lot.

Our dream house is in Hawaii by the ocean. It is surrounded by trees and it's near a Hawaiian restaurant if you like to eat out. There are entertainment rooms on the bottom floor. It has a sitting room overlooking the ocean so you can enjoy the view and it is designed by two famous architects.

Formula for the area of the entire house plan: $L \times W$

$$\text{Floor 1} = 11 \times 13$$

$$\text{Floor 2} = 9 \times 7.5$$

$$20 \times 20.5 = \boxed{410 \text{ m}^2}$$

Formula for the perimeter of house: add all sides up

$$11 + 11 + 13 + 13 + 9 + 9 + 7.5 + 7.5$$

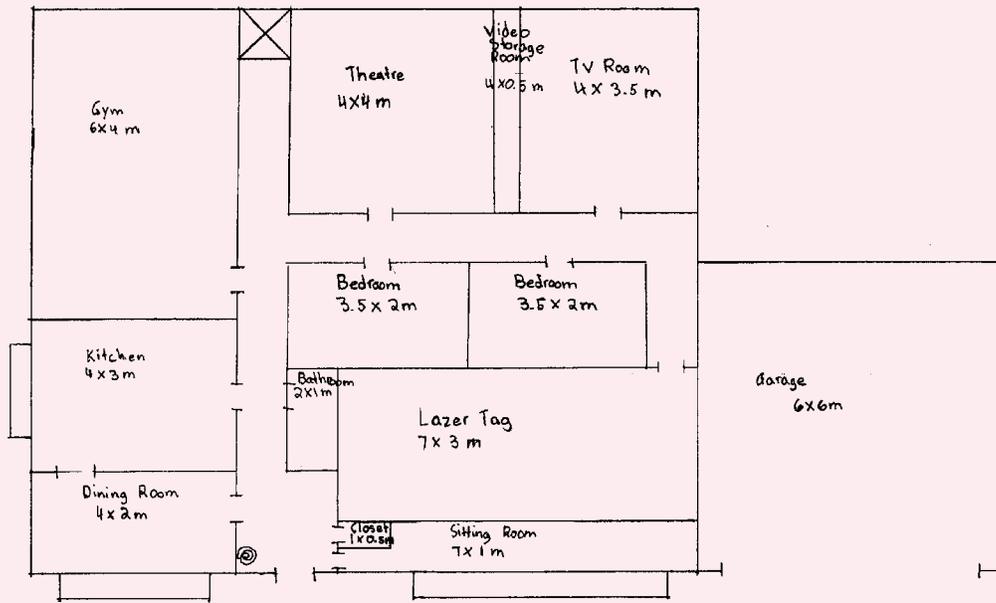
$$= \boxed{81\text{m}}$$

Formula for the cost per square meter: Assessed value

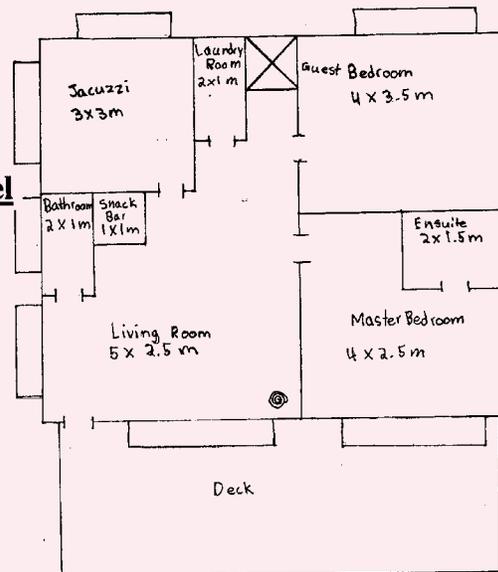
Area of house + $\frac{1}{4}$ of garage

$$\frac{216000}{419} = \boxed{\$515.51}$$

DREAM HOUSE PLAN FOOTPRINT



Main Level



Upper Level

Legend

Object	Symbol
Spiral Staircase	⊙
Window	—
Elevator	⊗
Door	— —

Scale



FULLY MEETS EXPECTATIONS

Teacher's Observations

The work is complete and accurate, and it satisfies requirements of the task. Dimensions and layout are logical.

- ◆ identifies the mathematical concepts and procedures needed
- ◆ applies relevant mathematical concepts and skills appropriately
- ◆ recording, substitutions, and calculations are accurate, including units and symbols
- ◆ work is generally clear and easy to follow
- ◆ constructs required diagrams effectively and accurately

	Not Yet	Meets	Fully	Exceeds
SNAPSHOT				
CONCEPTS				
STRATEGIES				
ACCURACY				
REPRESENTATION				

ROOM SIZES, PERCENTS AND CALCULATIONS

GARAGE $6 \times 7 = 42 \text{ M.}^2 \div 4 = 10.5 \text{ M.}^2 = \underline{2.49\%}$
LIVING ROOM $4.5 \times 6 = 27 \text{ M.}^2 = \underline{6.40\%}$
FRONT ENTRANCE $3 \times 2 = 6 \text{ M.}^2 = \underline{1.42\%}$
CLOSET $2 \times 2 = 4 \text{ M.}^2 = \underline{.95\%}$
STUDY $4 \times 2 = 8 \text{ M.}^2 = \underline{1.90\%}$
BATHROOM $4 \times 3 = 12 \text{ M.}^2 = \underline{2.85\%}$
HALLWAY $1 \times 8 = 8 \text{ M.}^2 = \underline{1.90\%}$
DINING ROOM $3 \times 4 = 12 \text{ M.}^2 = \underline{2.85\%}$
KITCHEN $8 \times 4 = 32 \text{ M.}^2 = \underline{7.59\%}$
RECREATION ROOM $4 \times 5 = 20 \text{ M.}^2 = \underline{4.74\%}$
LAUNDRY AND FURNACE ROOM $6 \times 3 = 18 \text{ M.}^2 = \underline{4.27\%}$
BACK ENTRANCE $4 \times 2 = 8 \text{ M.}^2 = \underline{1.90\%}$
OPEN AREA $4 \times 3 = 12 \text{ M.}^2 = \underline{2.85\%}$
STAIRWAY ENTRANCE $3 \times 2 = 6 \text{ M.}^2 = \underline{1.42\%}$
STORAGE CLOSET $3 \times 3 = 9 \text{ M.}^2 = \underline{2.13\%}$
STAIRWAY AND STAIRS $5 \times 3 = 15 \text{ M.}^2 = \underline{3.56\%}$
GARDEN STORAGE AREA $5 \times 2 = 10 \text{ M.}^2 = \underline{2.37\%}$
BEDROOM $6 \times 5.5 = 33 \text{ M.}^2 = \underline{7.82\%}$
WALK IN CLOSET $2 \times 2 = 4 \text{ M.}^2 = \underline{.95\%}$
HALL SPACE $1 \times 3 = 3 \text{ M.}^2 = \underline{.71\%}$
CLOSET $1 \times 2 = 2 \text{ M.}^2 = \underline{.47\%}$
WALK IN CLOSET $2.5 \times 2 = 5 \text{ M.}^2 = \underline{1.19\%}$
WALK IN CLOSET $2 \times 2 = 4 \text{ M.}^2 = \underline{.95\%}$
BATHROOM $2.5 \times 2 = 5 \text{ M.}^2 = \underline{1.19\%}$
MASTER BEDROOM $7 \times 4 = 28 \text{ M.}^2 = \underline{6.64\%}$
HALLWAY $1 \times 11.5 = 11.5 \text{ M.}^2 = \underline{2.73\%}$
HALLWAY $9 \times 1 = 9 \text{ M.}^2 = \underline{2.13\%}$
BEDROOM $4.5 \times 5 = 22.5 \text{ M.}^2 = \underline{5.33\%}$
WALK IN CLOSET $2 \times 2 = 4 \text{ M.}^2 = \underline{.95\%}$
BATHROOM $2.5 \times 3.5 = 8.75 \text{ M.}^2 = \underline{2.07\%}$
WALK IN CLOSET $2 \times 1.5 = 3 \text{ M.}^2 = \underline{.71\%}$
BEDROOM $4.5 \times 6 = 27 \text{ M.}^2 = \underline{6.40\%}$
BATHROOM $2 \times 3.5 = 7 \text{ M.}^2 = \underline{1.66\%}$
BEDROOM $3 \times 4.5 = 13.5 \text{ M.}^2 = \underline{3.20\%}$
WALK IN CLOSET $2 \times 1.5 = 3 \text{ M.}^2 = \underline{.71\%}$
OFFICE $2 \times 4.5 = 9 \text{ M.}^2 = \underline{2.13\%}$
HALLWAY $1 \times 5 = 5 \text{ M.}^2 = \underline{1.19\%}$

DREAM HOUSE DESCRIPTION AND CALCULATIONS

Our dream house is a new and modern style house. The house is 421.75 square meters. The top floor is 214.5 square meters and the bottom floor is 207.25 square meters. Our house is approximately worth \$117,500, that doesn't include the property. The cost per square meter is \$279.55. The house is located in a quiet old country land. It has beautiful landscape around it. We have a rock garden, flowers, many fine trees and extravagant and beautiful bushes around it. It is maintained by landscapers that we have hired. This modern style house has new white and beige vinyl siding on the outside with hand crafted modern wooden window frames. It also has double pane windows. The inside walls are a beige and a rosy tone. The doors are your standard new modern doors with brass long shaft door handles. The kitchen is equipped in the latest high tech appliances. The bathroom has golden faucets, towel racks, etc. It has a huge bubble jet bathtub. We chose this modern high tech house because all of us are interested in technology.

We added a study and a rec. room because we wanted some place to go to and watch television and just have fun or read for awhile. We also added an office to do our work in. It is in a very quiet location too. The garden storage closet and all the extra big walk in closets that we added in were necessary too, because you always need lots of storage places.

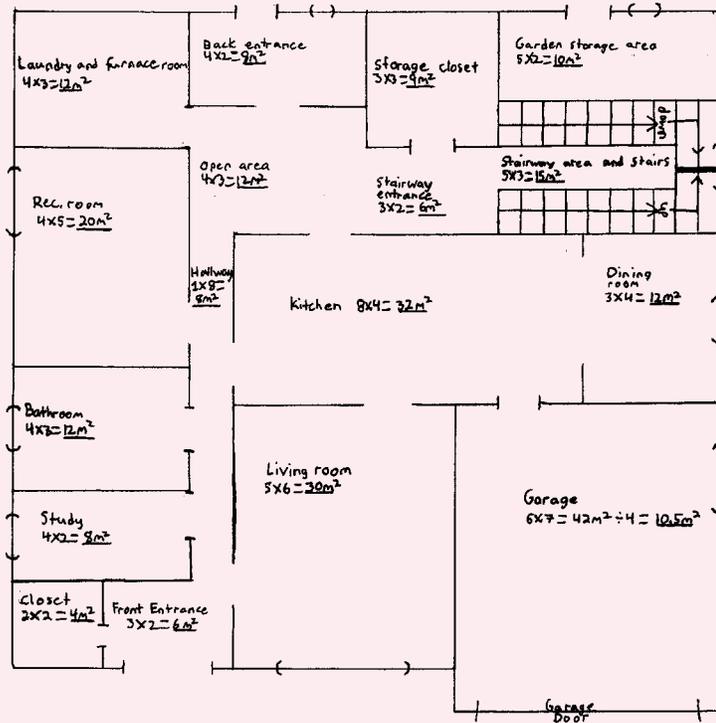
10.5	27	6	4	8	12	8	12	32	20	18	8
12	6	9	15	10	33	4	3	2	5	4	5
28	11.5	9	22.5	4	8.75	3	27	7	13.5	3	9
+	5										

These are the sizes of all the rooms. Added together they equal

421.75 square meters

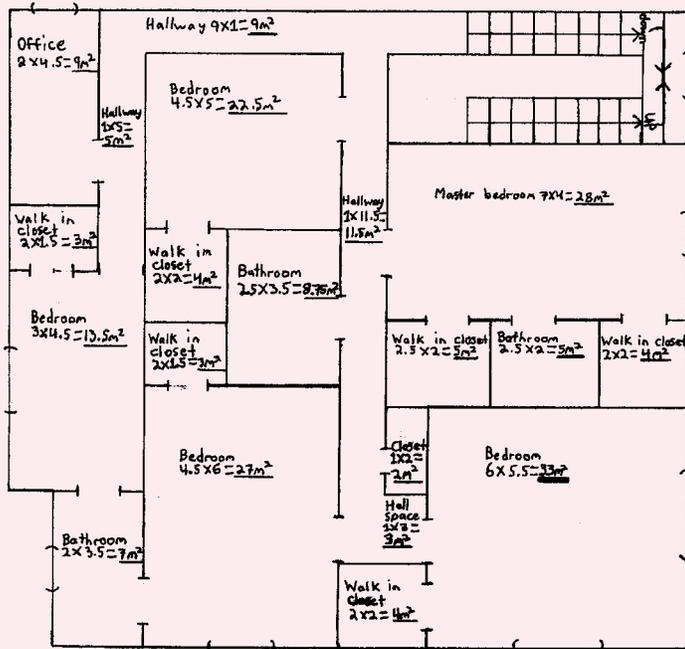
<u>Assessed values</u>	<u>Square meter costs</u>
<u>\$17,000</u>	<u>\$105.36</u>
<u>\$72,500</u>	<u>\$353.27</u>
<u>32,000</u>	<u>\$380.03</u>
\$117,555	\$279.55= the amount of square meters 421.75.

OUR DREAM HOUSE



LEVEL 1
214.5 SQUARE METERS

LEGEND
SCALE: 2 CENTIMETERS = 1 METER
WALL: ———
WINDOW: —|—|—
DOOR: —|—



LEVEL 2
207.25 SQUARE METERS

EXCEEDS EXPECTATIONS

Teacher's Observations

The work is complete, accurate, logical, and thorough. The student has exceeded requirements for the footprint, including a number of features that were not required.

- ◆ identifies the mathematical concepts and procedures needed
- ◆ applies relevant mathematical concepts and skills accurately and efficiently; thorough
- ◆ structures the task efficiently
- ◆ recording, substitutions, and calculations are accurate, including units and symbols
- ◆ work is detailed, clearly labelled, and logically organized
- ◆ constructs required diagrams effectively and accurately

	Not Yet	Meets	Fully	Exceeds
<i>SNAPSHOT</i>				
CONCEPTS				
STRATEGIES				
ACCURACY				
REPRESENTATION				

This three-bedroom, split-level, house, with all the extra necessities to relax is very ideal for a normal size family. This house is also very excellent for house parties and for children and adults to have a good time. This house is constructed form brick. When you enter from the front, there is a closet on your right, for coats and shoes, a door to your left which leads to the garage, a door to the right going to a Family room , a door going straight to the TV. room, or if you want to go to the second floor there are stairs leading up. If you go into the family room, you will see another door on the other side of the family room, which leads to a recreation room and a laundry room. There is also a hallway connected to the family room. In the hallway, there is a door to your right, which leads to a bathroom, a door leading to the same TV room, that you can enter in the entry, to the left, and if you go straight you will enter a hot tub room, where you can sit back and relax. In this hot tub room, there is also an elevator to go to the second floor. When you go up the stairs to the second floor, you will enter a dining room and living room. The door that you see in the dining room on your left, leads to a kitchen. If you walk to your right, from the stairs, and take another right, you will enter a hallway that has a door to your left, which leads to a bedroom. There are three other hallways that all join together. In these three hallways, there is a door leading to a bedroom, a door leading to a bathroom, a door leading to a master bedroom and bathroom, a door leading to the same kitchen, and a elevator right beside this kitchen, which goes downstairs. We chose to design the dream house like this because it has a lot of room, space and is very open. People can be in different areas of the house and still be occupied. For example, someone could be sitting in the hot tub, relaxing, while someone else is watching TV or playing in the recreation room. This house is perfect for a good size family and also for a

reunion or house party. A person could have some time alone in one of the many rooms and relaxing or relax with others in the living room, family room, TV room, or hot tub room. We chose a family room because if there is a lot of guests over for a family get-together, some people can sit in the living room and some people can sit in the family room. We chose a recreation room so children can play in a room and not ruin or break anything. We wanted to design a hot tub room because this way people can get their minds off stress and just relax. We wanted to design an elevator so people with walking disabilities could go to the second floor and come down to the first floor easily. We chose a TV room so, if people get bored they can entertain themselves with a TV. We designed a laundry room so people don't have to get their clothes washed from a store, when they can just wash them at home. The 2 car garage was chosen so the cars can be parked in the garage, to avoid getting them stolen. The stated value of this dream house is 305,458.90. The amount of interest paid on the present rate of interest is \$336,922.10.

Dimensions of each room and its area expressed as a percent of the total living area

Bottom Floor

Family room - $5.1\text{m} \times 4.9\text{m} = 9\%$

Rec. room - $6\text{m} \times 4\text{m} = 9\%$

Laundry room - $2.1\text{m} \times 4\text{m} = 3\%$

Bathroom - $2.8\text{m} \times 2.8\text{m} = 3\%$

TV room - $3\text{m} \times 4.1\text{m} = 5\%$

Hot tub room - $3.8\text{m} \times 3.8\text{m} + 2.9\text{m} \times 2.3\text{m} = 8\%$

Entry room - $4.6\text{m} \times 4\text{m} = 9\%$

Hallway - $3.5\text{m} \times 1\text{m} + 1\text{m} \times 1.2\text{m} = 2\%$

Garage - $9.2\text{m} \times 6\text{m} = 55\text{m}^2$, $\frac{55}{4} = 5\%$

Top Floor

Master bedroom + bathroom - $5\text{m} \times 4.9\text{m} = 9\%$

Bathroom - $3.1\text{m} \times 1.8\text{m} = 2\%$

Bedroom - $3.1\text{m} \times 3.1\text{m} = 4\%$

Bedroom - $3.7\text{m} \times 3.5\text{m} = 5\%$

Hallway - $1.1\text{m} \times 4.9\text{m} + 1.1\text{m} \times 3\text{m} + 1.1\text{m} \times 2.1\text{m} + 1.5\text{m} \times 1.6\text{m} = 5\%$

Stairs - $1\text{m} \times 3\text{m} + 1\text{m} \times 1\text{m} = 1\%$

Kitchen - $1.1\text{m} \times 3.2\text{m} + 2.4 \times 6 = 7\%$

Elevator - $1.5\text{m} \times 1.4\text{m} = 1\%$

Living room - $4.6\text{m} \times 4.5\text{m} + 1\text{m} \times 6.3\text{m} = 10\%$

Dining room - $3.3\text{m} \times 4\text{m} + 1\text{m} \times .9\text{m} + 2\text{m} \times 1.8\text{m} = 7\%$

Calculations

L x W = Area

Bottom floor

Family room - $5.1\text{m} \times 4.9\text{m} = 24.99\text{m}^2$.

Recreation room - $6\text{m} \times 4\text{m} = 24\text{m}^2$.

Laundry room - $2.1\text{m} \times 4\text{m} = 8.4\text{m}^2$

Bathroom - $2.8\text{m} \times 2.8\text{m} = 7.84\text{m}^2$

TV room - $3\text{m} \times 4.1\text{m} = 12.3\text{m}^2$

Hot tub room - $3.8\text{m} \times 3.8\text{m} (14.44\text{m}^2)$
 $+ 2.9\text{m} \times 2.3\text{m} (6.67\text{m}^2) = 21.07\text{m}^2$

Entry room - $4.6\text{m} \times 4\text{m} = 18.4\text{m}^2$

Hallway - $3.5\text{m} \times 1\text{m} (3.5\text{m}^2) + 1\text{m} \times$
 $1.2\text{m} (1.2\text{m}^2) = 4.7\text{m}^2$

Garage - $9.2\text{m} \times 6\text{m} = 55\text{m}^2$, $\frac{55}{4} =$

13.75m^2

Sub total = 135.45m^2

Area of Entire House

$135.45 + 134.76 = 270.21\text{m}^2$

Perimeter of Entire House

$8.5\text{m} + 6.8\text{m} + 3.7\text{m} + 6.5\text{m} + 2.5\text{m} +$
 $6\text{m} + 9.2\text{m} + 19.4\text{m} = 62.5\text{m}^2$

Cost of the House in per square meter

$\$468.06 + \$350 + 312.39 = \$1130.45$

Top Floor

Master bedroom + Bathroom - $5\text{m} \times$
 $4.9\text{m} = 24.5\text{m}^2$

Bathroom - $3.1\text{m} \times 1.8\text{m} = 5.58\text{m}^2$

Bedroom - $3.1\text{m} \times 3.1\text{m} = 9.61\text{m}^2$

Bedroom - $3.7\text{m} \times 3.5\text{m} = 12.95\text{m}^2$

Hallway - $1.1\text{m} \times 4.9\text{m} + 1.1\text{m} \times 3\text{m} +$
 $1.1\text{m} \times 2.1\text{m} + 1.5\text{m} \times 1.6\text{m} = 13.4\text{m}^2$

Stairs - $1\text{m} \times 3\text{m} + 1\text{m} \times 1\text{m} = 4\text{m}^2$

Kitchen - $1.1\text{m} \times 3.2\text{m} + 2.4\text{m} \times 6\text{m} =$
 17.92m^2

Elevator - $1.5\text{m} \times 1.4\text{m} = 2.1\text{m}^2$

Living room - $4.6\text{m} \times 4.5\text{m} + 1\text{m} \times$
 $6.3\text{m} = 27\text{m}^2$

Dining room - $3.3\text{m} \times 4\text{m} + 1\text{m} \times .9\text{m} +$
 $2\text{m} \times 1.8\text{m} = 17.7\text{m}^2$

Sub total = 134.76m^2

The amount of interest paid on a 25 year mortgage based on the present rate of interest.

Formula: $7.01 \times \frac{\text{mortgage rate}}{1000} =$

monthly payment

monthly payment $\times 12 =$ yearly payment

yearly payment $\times 25 = 25$ years including mortgage

25 years including mortgage - mortgage = 25 years interest

$7.01 \times \frac{\$305,458.90}{1000} = \$2141.27,$

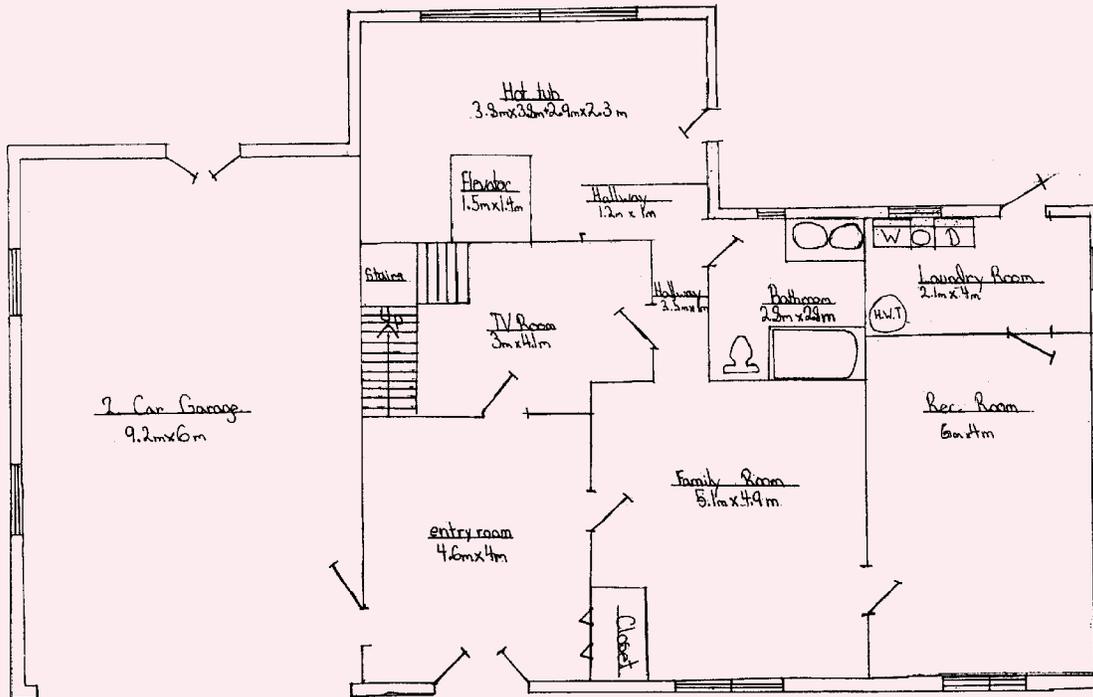
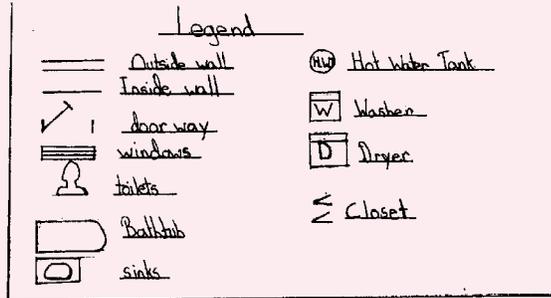
$\$2141.27 \times 12 = \$25,695.24$

$\$25,695.24 \times 25 = \$642,381$

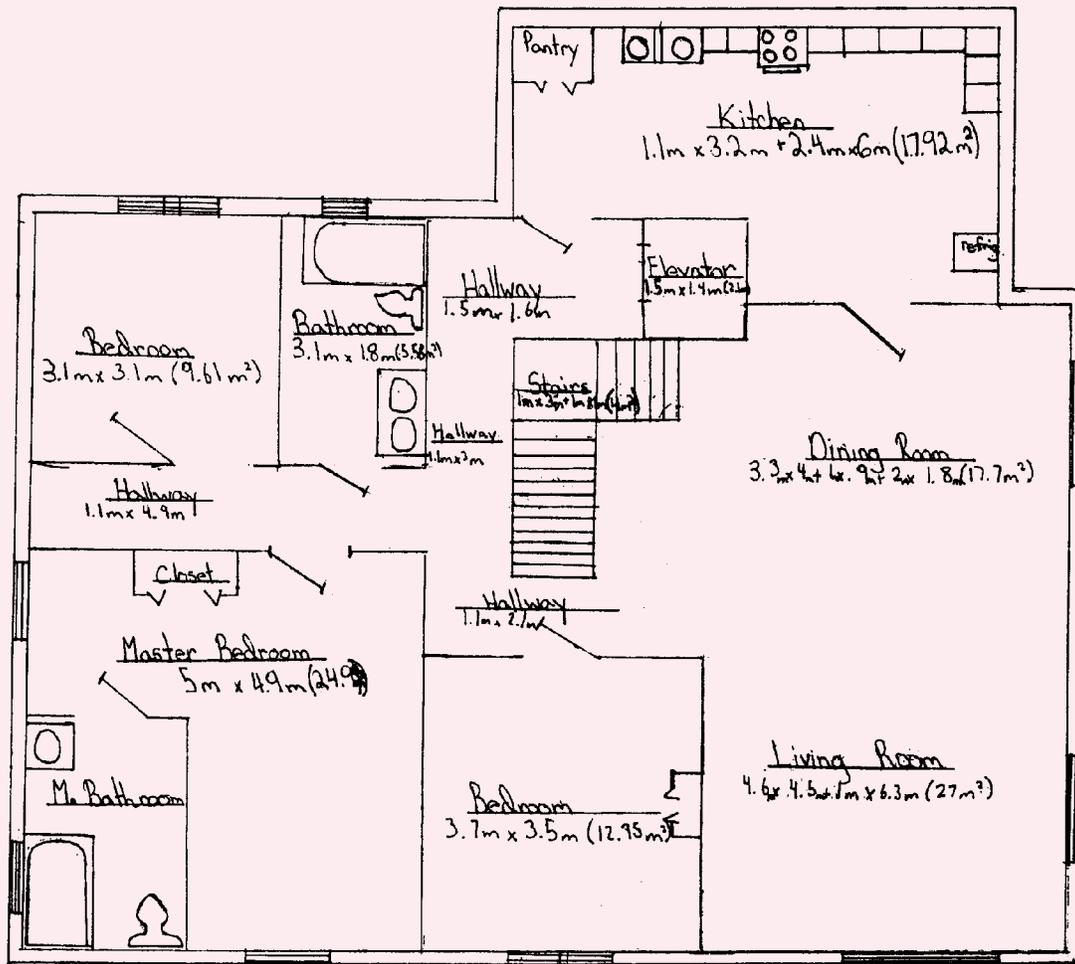
$642,381 - 305,458.90 = \$336,922.10.$

Dream House Plan

Footprint -



Bottom Floor



Top Floor