Consumer Math
Unit 6 - Adulting

Unit 6 Quiz Review - Answer Key

Name: _____ Date: _____

1) Rick makes $89,492 per year and wants to budget 25% of his salary toward his monthly housing payments. Find this monthly payment.

Monthly salary: $89,492 ÷ 12 = $7,457.67

Monthly payment: 0.25 × $7,457.67 = **$1,864.42**

2) Barbara makes $3,400 per month and wants to budget 30% of her salary toward her monthly housing payments. Find this monthly payment.

$3,400 × 0.30 = **$1,020**

3) Hannah's financial advisor believes that she should spend no more than 25% of her gross monthly income for housing. She has determined that amount is $1,654 per month. Based on this amount and her advisor's recommendation, what is Hanna's annual salary?

$1,654 is 25% of what?

$1,654 = 0.25 × *w*

$6,616 = *w* ← *this is her monthly salary*

6,616 × 12 = **$79,392**

4) Luke makes $14.50 per hour. He works 35 hours a week. He pays 23% of his gross earnings in federal and state taxes and saves 10% of his monthly gross income. He is considering renting an apartment that will cost $1300 per month. Based on his expenses, can he make the monthly payments?

weekly salary: $14.50 × 35 = $507.50
monthly salary: $507.50 × 4 = $2,030

federal & state taxes: 0.23 × $2,030 = $466.90
put into savings: 0.10 × $2,030 = $203
total: $466.90 + $203= $669.90

bringing home: 2030 – 669.90 = $1,360.01

He'll bring home $1,360.01 so he can make the rent payments but won't have money for much else.

5) The square footage and monthly rental of 30 similar one-bedroom apartments yield the linear regression formula $y = 1.3179x + 842.65$, where x represents the square footage and y represent the monthly rental price. Round answers to the nearest whole number.

a) Determine the monthly rent for an apartment with 1600 square feet.

$y = 1.3179(1600) + 842.65$
$y = 2108.64 + 842.65$
y = $2951.29

b) Determine the *approximate* square footage of an apartment with a monthly rent of $2800.

$2800 = 1.3179x + 842.65$
$1{,}957.35 = 1.3179x$
1,485.20 = x

6) The length of a room is 21.5 ft. When using a $\frac{1}{4}$ inch = 1 foot scale, what would be the length of the wall on a floor plan?

$$\frac{0.25\ in}{1\ ft} = \frac{x\ in}{21.5\ ft}$$

5.375 in = x

7) The conference room at Sue's Condo Complex measures 48ft x 36ft.

a) New flooring is being installed and costs $2.25 per square foot. Use the area formula given below to determine the total cost.

Area = length x width

Area = 48 × 36
Area = 1,728 square feet

Total Cost = area × price
Total Cost = 1,728 × $2.25
Total Cost = $3,888

b) Find the volume of the conference room if it has 12 foot ceilings.

Volume = length x width x height

Volume = length × width × height
Volume = 48 × 36 × 12
Volume = 20,736

8) Max is making garden in his backyard in the shape of a regular hexagon. He wants to make it so the length of each side is 6 feet and the apothem length is 8 feet. Use the area formula below to determine the area of the garden.

Area = 0.5 x apothem x length of each side x number of sides

Area = $0.5 \times 8 \times 6 \times 6$
Area = 144 cubic feet

9) The main conference room at a town building measures 54 feet by 36 feet and has a 12-foot ceiling. It is well insulated (level 10) and faces the east side of the building. Use the formula given below to determine the correct size of the air conditioner that should be purchased for the room.

BTU rating $\approx \frac{w.h.i.l.e.}{60}$

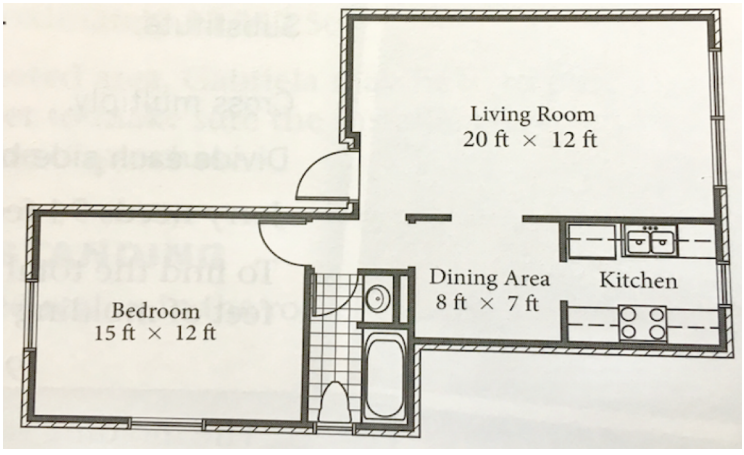
w: width of room
h: height of room
i: level of insulation
l: length of room
e: exposure
north: 16 east: 17
south: 18 west: 20

BTU $\approx \frac{54 \times 12 \times 10 \times 36 \times 17}{60}$

BTU $\approx \frac{3{,}965{,}760}{60}$

BTU $\approx$ 66,096

10) Sally wants to carpet the living room and bedroom of the apartment whose floor plan is shown below.



a) What is the total amount of carpet she will need?

Area = length x width

living room: $20 \times 12 = 240$
bedroom: $15 \times 12 = 180$
total: 420 square feet

b) The carpet she wants costs $1.92 per square foot. How much will it cost her to carpet these two rooms?

$420 \times \$1.92 =$ **$806.40**

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11) Kelly wants to buy a house. She earns $76,000 each year at her job.

a) What is her *monthly* gross income?

76,000 ÷ 12 = **$6,333.33**

b) Her expenses are given below. Determine her *monthly* total housing expenses.

annual property tax: $6,900
annual insurance: $762
monthly mortgage payments: $1,006

monthly property tax: 6,900 ÷ 12 = 575
monthly insurance: 762 ÷ 12 = 63.5

Total monthly expenses: 575 + 63.5 + 1006 = **$1,644.50**

c) Use the front-end ratio to determine if her bank will loan her the money for her mortgage. Remember that the bank wants the front-end ratio to be less than 28%.

front-end ratio = $\frac{monthly\ housing\ expenses}{monthly\ gross\ income}$

$$\frac{monthly\ housing\ expenses}{monthly\ gross\ income} = \frac{1644.50}{6333.33} = 0.26 = 26\%$$

Her front-end ratio is less than 28%, so yes, she will get the loan.

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12) The MacDonald's want to buy a house. They have a gross income of $135,440.

a) What is their *monthly* gross income?

$135,440 ÷ 12 = **$11,286.67**

b) Their monthly expenses are given below. Determine their *monthly* total expenses.

annual property tax: $4,280
annual insurance: $1,740
monthly mortgage payments: $1,987
monthly car payment: $480
monthly credit card bill: $6,200

Monthly property tax: 4280 ÷ 12 = 356.67
Monthly insurance: 1740 ÷ 12 = 145

Total monthly expenses: 356.67 + 145 + 1987 + 480 + 6200 = **$9168.67**

c) Use the back-end ratio to determine if their bank will loan them the money for their mortgage. Remember that the bank wants the back-end ratio to be less than 36%.

back-end ratio = $\frac{total\ monthly\ expenses}{monthly\ gross\ income}$

$$\frac{total\ monthly\ expenses}{monthly\ gross\ income} = \frac{9168.67}{11286.67} = 0.812 = \mathbf{81.2\%}$$

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13) Mary and Tom are buying a $480,000 home and made an 18% down payment.

a) How much money did they borrow for their loan?

Down payment: $480,000 × 0.18 = $86,400
Loan amount: 480,000 – 86,400 = **$393,600**

b) They have been approved for a 5.5% APR mortgage. What will be their annual interest?

0.055 × 393,600 = **$21,648**

c) What will be their daily interest?

Annual interest = 21,648
Daily interest = 21,548 ÷ 365 = **$59.31**

d) If they made their down payment on April 23th, how much will be charged in prepaid interest at the closing?

There are 30 days in April, so they would be pre-paying for 7 days.

$59.31 × 7 = **$415.17**

e) If closing costs are usually between 2% and 7% of the selling price, what might Mary and Tom expect to pay in total at the closing?

0.02 × 480,000 = $9600
0.07 × 480,000 = $33,600

They can expect to pay between $9,600 and $33,600 at the closing

14) Last year, Kevin paid a monthly condo maintenance fee of $532. Twelve percent of this fee covered his monthly property taxes.

a) What is his monthly property tax for the condo?

$532 × 0.12 = **$63.84**

b) How much did Kevin pay last year in property taxes on his condo?

$63.84 × 12 = **$766.08**