U1 p1

Math 20 – Unit 1 – REVIEW

To the Test – be sure to bring:

(1) your personally-prepared 8 ½ " by 11" study guide for this test
(2) your simple, non-graphing calculator and
(3) your pencils
(4) your BluGold ID

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1. Evaluate: $\frac{3}{5}+\frac{2}{35}-\frac{5}{14}$

Must have a common denominator. Check to see if the answer is simplified.

70 is the common denominator

$\frac{3}{5}\left(\frac{14}{14}\right)+\frac{2}{35}\left(\frac{2}{2}\right)-\frac{5}{14}\left(\frac{5}{5}\right)$

$\frac{42}{70}+\frac{4}{70}-\frac{25}{70}=\frac{21}{70}$ Reduce $\frac{21}{70}\div\left(\frac{7}{7}\right)=\boxed{\frac{3}{10}}$

2. Evaluate: $5\frac{7}{15}-2\frac{3}{20}$

$5\frac{7}{15}\left(\frac{4}{4}\right)-2\frac{3}{20}\left(\frac{3}{3}\right)$

$5\frac{28}{60}-2\frac{9}{60}=3\frac{19}{60}$

what if we had $5\frac{28}{60}-2\frac{39}{60}$?

could write $5\frac{28}{60}$ $\quad 4\frac{88}{60}$

$-2\frac{39}{60}$ $\Rightarrow$ $-2\frac{39}{60}$

$2\frac{49}{60}$

3. Evaluate: $2[5+2(7-4)^2]-3(2)$ and $3(8\div 4)-4[5+2(7-4)^2]$

$2[5+2\cdot 9]-6$

$2[5+18]-6$

$2[23]-6$

$46-6$

$\boxed{40}$

$3(2)-4[5+2\cdot 3^2]$

$6-4[5+2\cdot 9]$

$6-4[5+18]$

$6-4[23]$

$6-92$

$\boxed{-86}$

U1 p2

4. Evaluate: $-\frac{5}{21}+\left(-\frac{3}{14}\right)$ and $(-4+9)-(-8+5)$

LCD = $21: 3\cdot 7$, $14: 2\cdot 7$, $3\cdot 7\cdot 2 = 42$

$-\frac{5}{21}\left(\frac{2}{2}\right)$ $-\frac{3}{14}\left(\frac{3}{3}\right)$

$\frac{-10}{42}+\left(\frac{-9}{42}\right)=\frac{-19}{42}$

$5-(-3)$

$5+3$

8

5. Evaluate: $-\frac{14}{27}\bullet\left(-\frac{18}{35}\right)\div\left(-\frac{24}{25}\right)$

Reciprocal

$\frac{-14}{27}\cdot\left(\frac{-18}{35}\right)\cdot\left(\frac{-25}{24}\right)=-\frac{5}{18}$

6. Combine like terms and simplify

$-8(5g+6)+8-4(10g-11n)+12(6n)$

$-40g-48+8-40g+44n+72n$

$-80g+116n-40$

and

$-8\left(\frac{3}{4}g+6\right)-8+4\left(\frac{5}{6}g-11\right)-8$

$-8\left(\frac{3}{4}g\right)-48-8+4\left(\frac{5}{6}g\right)-44-8$

$-6g-48-8+\frac{10}{3}g-44-8$

$-\frac{18}{3}g+\frac{10}{3}g-56-52$ $=-\frac{8}{3}g-108$

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7. Combine like terms and simplify

$$5.4+1.2w-0.4(2w+5)-(w-2.3)$$

$5.4 + 1.2w - .8w - 2.0 - w + 2.3$

$1.2w - .8w - w + 5.4 - 2.0 + 2.3$

$.4w - 1w \qquad 3.4 + 2.3$

$-.6w + 5.7$

8. Solve and check the equation for the value of y:

$$48y+8-y-6=54+2y-2$$

$47y + 2 = 52 + 2y$

$-2 \quad = -2$

$47y = 50 + 2y$

$-2y \quad = \quad -2y$

$45y = 50$

$\frac{45y}{45} = \frac{50}{45}$

$y = \frac{10}{9} \quad \{\frac{10}{9}\}$

Be sure to check!

9. Solve check the equation for the value of m:

$$5m-(7m+9)+4=19m+5(1-4m)$$

$5m - 7m - 9 + 4 = 19m + 5 - 20m$

$-2m - 5 = -1m + 5$

$+5 \quad = \quad +5$

$-2m = -1m + 10$

$+1m = +1m$

$-1m = +10$

$\frac{-1m}{-1} = \frac{+10}{-1}$

$m = -10 \quad \{-10\}$

And

$$-6m-(7m+9)+4=7m+5(1-4m)$$

$-6m - 7m - 9 + 4 = 7m + 5 - 20m$

$-13m - 5 = -13m + 5$

$+5 \quad = \quad +5$

$-13m = -13m + 10$

$+13m = +13m$

$0 = 10$

FALSE

NO SOLUTION, $\emptyset$

NOTE: IF THE final step had been $10=10$, a true statement the solution would be {all the Reals}

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10. Write the main equation for solving these two problems and then solve.

The sum of two consecutive integers is 89. Find the integers.

x , $x+1$

Equation: $x + (x+1) = 89$

$2x + 1 = 89$

$-1 \quad = -1$

$2x = 88$

$\frac{2x}{2} = \frac{88}{2}$

$x = 44$

The integers are 44 and 45.

Find three consecutive odd integers such that their sum is five more than four times the largest integer.

x

$x+2$

$x+4$

Equation: $x + (x+2) + (x+4) = 4(x+4) + 5$

$3x + 6$

$= 4x + 16 + 5$

$3x + 6 = 4x + 21$

$-6 \quad = \quad -6$

$3x = 4x + 15$

$-4x = -4x$

$-x = 15$

$x = -15$

The integers are:

$-15, -13, -11$

11. Write the main equation for solving these two problems and then solve.

The Rental Cars charges \$39 per day plus \$0.15 per mile. If J spent \$57.60 on a 1-day rental, how many miles did he drive?

Equation: $39 + .15(x) = 57.60$

$-39 \quad = -39.00$

$.15x = 18.60$ multiply by 100

$15x = 1860$

$\frac{15x}{15} = \frac{1860}{15}$

$x = 124$ miles

The \$120 book is now on sale for 15% off. What is the sale price?

ORIGINAL $-$ $\underset{\text{off}}{\%}$ (original) = sale price

Equation: $120 - .15(120) =$ sale price

$120 - 18 =$ sale price

\$102 = sale price

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12. Write the main equation for solving these two problems and then solve.

Kit paid $12.65 for a backpack that was marked down 45%. Find the original retail price of the backpack.

Equation: $x - .45(x) = 12.65$ multiply all by 100

$100x - 45x = 1265$

$55x = 1265$

$\frac{55}{55}x = \frac{1265}{55}$

$x = \$23$

Last year Mr. Jay deposited $14,000 into an account earning 6% simple interest for one year. How much interest was earned?

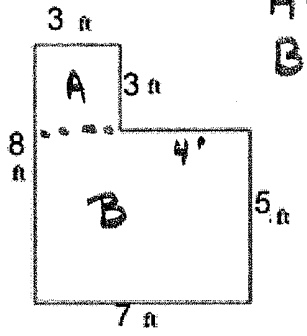
Interest = Principal · rate · time ← 1 year

Interest = $14000 \cdot .06 \cdot 1$

Interest = $840

13. Geometry Review:

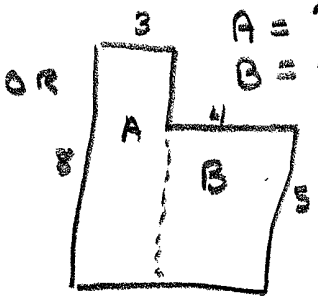
Find the area of this plot.



A = 3 × 3 = 9 sq ft

B = 5 × 7 = 35 sq ft

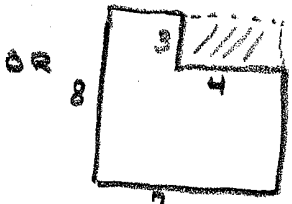
44 sq ft



A = 3 · 8 = 24

B = 4 · 5 = 20

44

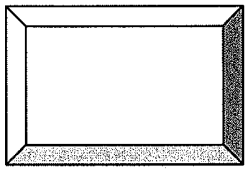


complete box = 8 × 7 = 56

outside part = 3 × 4 = −12

44

Find the **area of the outside frame**, if the inner picture is 8 x 5 and the entire overall framed picture is 10 x 6.



inside 8 × 5 = 40 sq. units

outside 10 × 6 = 60 sq. units

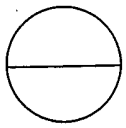
60 − 40 = 20 sq. units the area of the frame

U1 p6

radius = 4.2 ft

A circle has a diameter of 8.4 ft. Find its circumference and area, using 3.14 for π.
(Round your answer to one decimal place.)

$C = \pi d$ $A = \pi r^2$

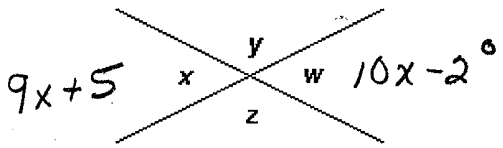


$C = 3.14(8.4)$
$C = 26.376$
$C \approx 26.4$ feet

$A = 3.14(4.2)^2$
$A = 3.14(17.64)$
$A = 55.3896$
$A \approx 55.4$ sq. ft.

14. Finding angle measurements:

Suppose $m\angle w = 10x - 2^\circ$ and $m\angle x = 9x + 5^\circ$ Find the measures of all four angles.



$9x + 5 = 10x - 2$
$+2 \quad = \quad +2$
$9x + 7 = 10x$
$-9x \quad = \quad -9x$
$7 = x$

$9(7) + 5 = 63 + 5 = 68^\circ$

$\angle x = 68^\circ$, $\angle w = 68^\circ$
$\angle y = 112^\circ$, $\angle z = 112^\circ$

$\angle x + \angle y = 180^\circ$
$68 + \angle y = 180$
$\angle y = 112^\circ$

Twice the supplement of angle A is 160° more than three times its complement. Find the angle, its complement, and its supplement.

supplement of $\angle A = 180^\circ - \angle A$
complement of $\angle A = 90^\circ - \angle A$

$2(180^\circ - \angle A) = 3(90^\circ - \angle A) + 160^\circ$

$360^\circ - 2A = 270^\circ - 3A + 160^\circ$
$360^\circ - 2A = 430^\circ - 3A$
$-360^\circ \quad = 360^\circ$
$-2A = 70^\circ - 3A$
$+3A = \quad +3A$
$A = 70^\circ$

Angle is 70°
supplement is $180 - 70$ or 110°
Complement is $90 - 70$ or 20°

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15. Application Problems: X

How many milliliters (mL) of a 12% alcohol solution must be added to 50 mL of a 3% alcohol solution to make a 8% alcohol solution? Express your answer as a mixed number if necessary.

Equation: $.12x + .03(50) = .08(x+50)$

multiply everything by 100

ml	%	solution
x	.12	$.12x$
50	.03	$.03(50)$
Total $x+50$	.08	$.08(x+50)$

EQUATION ↓

$12x + 3(50) = 8(x+50)$

$12x + 150 = 8x + 400$

$-150 \quad = \quad -150$

$12x \quad = 8x + 250$

$-8x \quad = -8x$

$4x \quad = 250$

$\frac{4x}{4} = \frac{250}{4}$

$x = 62.5$ mL

one needs $62\frac{1}{2}$ mL of an alcohol solution.

How many pounds of cashews which sell for $7.00 per pound should be mixed with 4 pounds of pistachios at $4.00 per pound to get a mix worth $5.00 per pound?

EQUATION ↓

Pounds	$ per pd	cost
x	7	$7x$
4	4	16
$x+4$	5	$5(x+4)$

Equation:

$7x + 16 = 5(x+4)$

$7x + 16 = 5x + 20$

$-16 \quad = \quad -16$

$7x \quad = 5x + 4$

$-5x \quad -5x$

$\frac{2x}{2} = \frac{4}{2}$

$x = 2$ pounds

one would need 2 pounds of cashews.