MATH 025 EXAM 1 REVIEW

The following are review exercises for the Math 025 exam 1. These exercises are provided for you to practice or test yourself for readiness for this exam. There are many more problems appearing here than would be on the exam. These exercises represent many of the types of problems you would be expected to solve on the exam but are not meant to represent all possible types of problems that could appear on the exam. Note for exam 1 you must show all your work in order to receive full credit. Scientific calculators are permitted: graphing calculators or calculators with QWERTY keyboards are NOT permitted. Word problems must be done using algebraic methods to receive full credit.

1. Perform the operations. Express your answer in simplest form:

   a) $(\frac{18}{35}) \div (-\frac{36}{14}) =$

   b) $\frac{3}{4} - \frac{1}{12} + \frac{5}{36} =$

   c) $-16 - 2 \cdot 3 + 4 - 3 - 2 =$

   d) $96 - 32 \div 16 + 8 =$

   e) $(3-8)^2(1-5) =$

   f) $-3^2 + (4-5)^0 =$

   g) $3 - 7[-22 - 4(5-2)] =$

   h) $\frac{4-2[(3-5)+2]}{2+(7-3)} =$

2. For $x = -2$ and $y = 5$, evaluate:

   a) $-x^2 - x - 14$

   b) $(2x + y)^2$

   c) $y|2x| - x$

   d) $(y - x) + |x - y|$

   e) $-\frac{2x+y^2}{y+2}$

   f) $35\left(\frac{y}{5} + \frac{10}{7}\right)$

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3. Simplify the following expressions:

   a) $(4xy)(2x^3y)^2$

   b) $(3x)^2(2xy)^3$

   c) $4 - 3(a - 2b) + 6$

   d) $4(x + y) - 2(x - y)$

   e) $2x(x - 4) - 3x(5 - x) + 8$

   f) $3\{2 - 4[2 + 3(x + 3) + 5] - 1\}$

4. Solve for the variable. Leave answers exact:

   a) $3x = 36$

   b) $4.8x = -18.6$

   c) $x - 4.8 = -18.6$

   d) $5x - 2x = 8 - 12$

   e) $4a - 2(a - 3) = 12$

   f) $20t - 5(t - 1) = 0$

   g) $20 - 5(t - 1) = 0$

   h) $3(t + 2) + 5t = 36$

   i) $6(y - 3) + 3(y + 5) = 51$

   j) $2x - (7 - 4x) = 10x - (x - 2)$

   k) $3r(r - 1) = 2r(r - 2) - (3 - r^2)$

   l) $3(2a - 1) - (a + 6) = 12$

   m) $\frac{2x}{3} - \frac{3x+1}{6} = 8$

5. Solve for the variable. Express your answer using interval notation and graph your answer:

   a) $6x \leq 48$

   b) $.8x > -8.4$

   c) $a - 2.8 \geq -12.2$

   d) $6x - 3x < 8 - 17$

   e) $5a - 2(a - 3) \geq 12$

   f) $-4 < x \leq 2$

   g) $-6 < x \leq -2$

   h) $20y - 5(y - 1) \geq 0$

   i) $20 - 5(y - 1) < 0$

   j) $4(a + 2) + 5a \geq 29$

   k) $-4 \leq 6(c - 3) + 3(c + 5) \leq 41$

   l) $3x - (5 - 4x) > 8x - (x + 2)$

   m) $3x(x - 1) \leq 2x(x - 2) - (3 - x^2)$

   n) $4(2a - 1) - (a + 6) \geq 12$

   o) $\frac{3x}{4} - \frac{x+1}{5} \geq 6$

6. Solve the formula for the given variable:

   a) V = lwh for l

   b) $7x - 3y = -4\ for\ y$

   c) $7x - 3y = -4\ for\ x$

   d) $m = (a + d)T\ \ for\ T$

   e) $m = (a + d)T\ \ for\ d$

   f) $V = \frac{1}{3}\pi r^2 h\ \ for\ h$

g) $A = \frac{a+b+c}{3}$ for c

h) $C = \frac{5}{9}(F - 32)$ for F

For problems 7-13, answers should be EXACT (no rounding): Problem 14 requires rounding.

7. The length of a rectangle is 6 more than 3 times the width. If the perimeter of the rectangle is 67 inches, find the length and width of the rectangle. (Algebraic solutions only)

8. Bill can drive from Springfield to Teton at a certain rate of speed in 6 hours. If he increases his speed by 20 mph he can make the trip in 4 hours. How far is it from Springfield to Teton? (Algebraic solutions only)

9. Harry invested $4,000.00 in two investments: one investment was a CD that paid 3.4% annual interest, and the other investment was a bond that paid 2.5% annual interest. If he received a check in the mail at the end of the year for $114.40 for both investments, how much did he invest in the CD? (Algebraic solutions only)

10. A professor wants to supplement her pension with investment interest. If she invests $28,000 at 6% annual simple interest, how much would she have to invest at 7% annual simple interest to achieve a goal of $3,500 per year in supplemental income? (Algebraic solutions only)

11. Two remotely controlled unmanned aircraft are launched in opposite directions. One flies east at 78 mph, and the other west at 82 mph. How long will it take the aircraft to fly a combined distance of 560 miles? (Algebraic solutions only)

12. How many gallons of a 3% salt solution must be mixed with 50 gallons of a 7% salt solution to obtain a 5% solution? (Algebraic solutions only)

13. Susan and Lee leave their homes at 8:00 A.M. , going towards each other along the same route, which is 9 miles long. Susan walks at 4 mph and Lee jogs at 8 mph. At what time will they meet ? (Algebraic solution only.)

14. A car rental company charges $ 32.40 per day and 15 cents per mile. If a 5 day car rental costs $ 210.17, to the nearest mile, how many miles were driven? (Algebraic solution only.)

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ANSWERS:

1 $a)\ -1/5\ \ b)\ 29/36\ \ c)\ -23\ \ d)\ 102\ \ e)\ -100\ \ f)\ -8\ \ g)\ 241\ \ h)2/3$

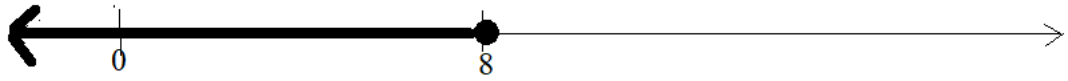
2 $a)\ -16\ \ b)1\ \ c)\ 22\ \ d)\ 14\ \ e)\ -3\ \ f)\ 85$

3 $a)\ 16x^7y^3\ \ b)\ \ 72x^5y^3\ \ c)\ \ 10-3a+6b\ \ d)\ 2x+6y\ \ e)\ 5x^2-23x+8\ \ f)\ -189-36x$

4 $a)\ 12\ \ b)\ -31/8\ \ c)\ -13.8\ \ d)\ -4/3\ \ e)\ 3\ \ f)\ -1/3\ \ g)\ 5\ \ h)\ 15/4\ \ i)\ 6\ \ j)\ -3$
$k)\ -3\ \ \ l)\ \ 21/5\ \ \ m)\ 49$

FOR GRAPHS OF INEQUALITIES HERE, WE ARE USING OPEN AND CLOSED CIRCLE NOTATION FOR THE ENDPOINTS. IT IS ACCEPTABLE FOR YOU TO USE THE PARENS/BRACKET ENDPOINT NOTATION AS WELL.

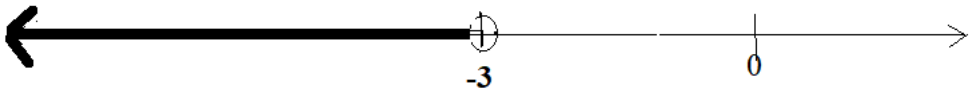
5 $a)\ x \le 8\ \ (-\infty, 8]$



$b)\ \ x > -21/2\ \ \ (-21/2, \infty)$

$c)\ \ a \ge -9.4\ \ \ [-9.4, \infty)$

$d)\ x < -3\ \ \ (-\infty, -3)$



$e)\ a \ge 2\ \ \ [2, \infty)$

$f)\ -4 \le x \le 2\ \ \ (-4,2]$

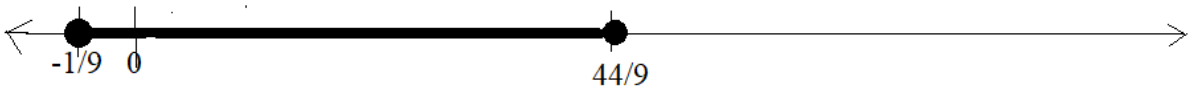
$g)\ -6 < x \leq -2 \quad (-6, -2]$

$h)\ y \geq -1/3 \quad [-\frac{1}{3}, \infty)$

$i)\ y > 5 \quad (5, \infty)$

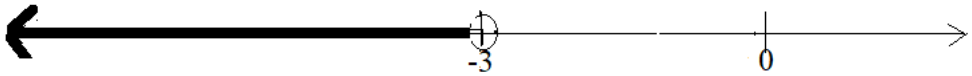
$j)\ a \geq \frac{7}{3} \quad [7/3, \infty)$

$k) -1/9 \leq c \leq 44/9 \quad [-\frac{1}{9}, 44/9]$



$l)\ No\ solution$

$m)\ x \leq -3 \quad (-\infty, -3]$



$n)\ a \geq 22/7 \quad [22/7, \infty)$

$o)\ x \geq 124/11 \quad [124/11, \infty)$

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6 $a)\ l = \frac{V}{wh}$ $b)\ y = \frac{7x+4}{3}$ $c)\ x = \frac{3y-4}{7}$ $d)\ T = \frac{m}{a+d}$ $e)\ d = \frac{m-aT}{T}$

$f)\ h = \frac{3V}{\pi r^2}$ $g)\ c = 3A - a - b$ $h)\ F = \frac{9}{5}C + 32\ or\ \frac{9C+160}{5}$

7. $w = 6\frac{7}{8}, l = 26\frac{5}{8}$ 8. $240\ miles$ 9. \$1600 10. \$26,000 11. $3\frac{1}{2}\ hours$ 12. $50\ gal$
13. $8{:}45\ am$ 14. $321\ miles$