Math 30 Test 1 Name: Key

Show all reasonable work **clearly, neatly, systematically,** and **understandably**. Any understatement and/or incorrect statement may be penalized.

1. (2 pts) Translate: "Three-eighths of the difference between twice a number and four"

$\frac{3}{8} \cdot (2x - 4)$

2. (2 pts) Translate: " The sum of four times a number and seven"

$4x + 7$

3. (2 pts) Translate: "Five less than the quotient of a number and three"

$\frac{x}{3} - 5$ or $(x \div 3) - 5$

4. (2 pts) Translate: " The product of five and the difference between a number three"

$5 \cdot (x - 3)$

5. (2 pts) Translate: " The quotient of five less than a number and three times the number"

$\frac{x-5}{3x}$ or $(x-5) \div (3x)$

6. (2 pts) Translate: " A number decreased by the difference between sixteen times the number and three"

$x - (16x - 3)$

7. (5 pts) Simplify: $-7x - 3[2x - 4(3 - 2x) - 4x]$

$= -7x - 3 \cdot [2x - 12 + 8x - 4x]$

$= -7x - 3 \cdot [6x - 12]$

$= -7x - 18x + 36$

$= -25x + 36$ //

8. (5 pts) Evaluate: $b^2 - 4ac$, for $a = \frac{1}{3}, b = -\frac{2}{5}, c = -\frac{5}{8}$

$= \left(-\frac{2}{5}\right)^2 - 4\left(\frac{1}{3}\right)\left(-\frac{5}{8}\right)$

$= \frac{4}{25} - \frac{\cancel{4}^{1}}{\cancel{1}} \cdot \left(\frac{1}{3}\right)\left(-\frac{5}{\cancel{8}_{2}}\right)$

$= \frac{6 \cdot 4}{6 \cdot 25} + \frac{5 \cdot 25}{6 \cdot 25}$

$= \frac{24}{150} + \frac{125}{150}$

$= \frac{149}{150}$ //

side

$25 = 5^2$

$6 = 2 \cdot 3$

$LCD = 2 \cdot 3 \cdot 5^2$

$= 150$

22

9. (5 pts) Solve: $-0.2(0.3x+7)+0.3(1.2x-0.7)=x$.

$-0.06x - 1.4 + 0.36x - 0.21 = x$

$0.30x - 1.61 = x$

$-1.61 = 0.70x$

$\frac{-1.61}{0.70} = x$

$-\frac{161}{70} = x$

$-\frac{23}{10} = x$

$\left\{-\frac{23}{10}\right\}$

10. (5 pts) Solve: $\frac{5}{6}(n-2)=-\frac{1}{3}\left(n-\frac{11}{3}\right)+1$.

$\frac{5}{6}n - \frac{5}{3} = -\frac{1}{3}n + \frac{11}{9} + 1$

$18\cdot\left(\frac{5}{6}n - \frac{5}{3}\right) = \left(-\frac{1}{3}n + \frac{11}{9} + 1\right)\cdot 18$

$15n - 30 = -6n + 22 + 18$

$15n - 30 = -6n + 40$

$21n - 30 = 40$

$21n = 70$

$n = \frac{70}{21}$

$n = \frac{10}{3}$

$\left\{\frac{10}{3}\right\}$

side

$\frac{5}{\cancel{6}_3}\cdot\frac{\cancel{2}^1}{1} = \frac{5}{3}$

$\frac{1}{3}\cdot\frac{11}{3} = \frac{11}{9}$

$\frac{\cancel{18}^3}{1}\cdot\frac{5}{\cancel{6}_1} = 15$

$\frac{\cancel{18}^6}{1}\cdot\frac{5}{\cancel{3}_1} = 30$

$\frac{1}{\cancel{3}_1}\cdot\frac{\cancel{18}^6}{1} = 6$

$\frac{11}{\cancel{22}_1}\cdot\frac{\cancel{18}^2}{1} = 22$

11. (5 pts) Solve: $5(2-d)<3(d-5)+3d$. Write the solution in interval notation and graph.

$10 - 5d < 3d - 15 + 3d$

$10 - 5d < 6d - 15$

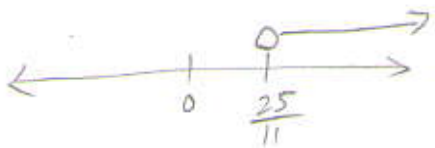
$10 < 11d - 15$

$25 < 11d$

$\frac{25}{11} < d$

i) $\left(\frac{25}{11}, \infty\right)$

ii)



12. (5 pts) Solve: $4 \le -4(x-2) < 20$. Write the solution in interval notation and graph.

$4 \le -4x + 8 < 20$

$-4 \le -4x < 12$

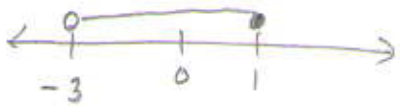
$1 \ge x > -3$

or

$-3 < x \le 1$

i) $(-3, 1]$

ii)



13. (5 pts) Solve for r : $t = -40 + 9(r + az)$.

$t = -40 + 9r + 9az$

$t - 9az = -40 + 9r$

$t - 9az + 40 = 9r$

$\frac{t - 9az + 40}{9} = r$ //

14. (5 pts) The area of a triangle is 650 in^2. Find the measure of its base if its height is 26 *in*.

$A = \frac{1}{2} \cdot b \cdot h$

$650 = \frac{1}{2} \cdot x \cdot \frac{26}{1}$

$650 = \frac{1}{2} \cdot x \cdot \frac{26}{1}$ (13)

$650 = 13x$

$50 = x$

base is 30 in.

side

$13 \overline{)650}$ → 50

-65

0

-0

0

15

15. (5 pts) An art gallery agreed to sell an artist's sculpture for a commission of 45%. What must be the selling price of the sculpture if the gallery would like to make $13500? (*show your work in 3-step format*)

① selling price of sculpture = x

② < commission = selling price × commission rate >

$13500 = x \cdot 0.45$

$13500 = 0.45x$

$\frac{13500}{0.45} = x$

$\frac{1350000}{45} = x$

$30000 = x$

③ sculpture must sell at $30000. //

16. (5 pts) Five times the first of three consecutive even integers is four less than three times the third integer. Find the middle integer. (*show your work in 3-step format*)

① 1st even integer = x

2nd " = $x+2$

3rd " = $x+4$

② $5x = 3(x+4) - 4$

$5x = 3x + 12 - 4$

$5x = 3x + 8$

$2x = 8$

$x = 4$

③ middle integer is 6. //

17. (5 pts) A pack of game cards contains level 3 monster cards, level 4 magician cards, and level 5 heroes, and they worth one cents, five cents, and ten cents each respectively. If there are 20 more level 3 cards than level 4 cards and the number of level 4 cards are triple the number of level 5 cards, then the value of the pack of game cards is $5.80, how many of level 4 cards are in that pack? (*show your work in 3-step format*)

①

	unit value	× quantity	= total value $
level 3	0.01	$3x+20$	$0.01(3x+20)$
level 4	0.05	$3x$	$0.05(3x)$
level 5	0.10	x	$0.10(x)$

② $0.01(3x+20) + 0.05(3x) + 0.10x = 5.80$

$0.03x + 0.20 + 0.15x + 0.10x = 5.80$

$0.28x + 0.20 = 5.80$

$0.28x = 5.60$

$x = \frac{5.60}{0.28}$

$x = \frac{560}{28}$

$x = 20$

③ there are 60 level 4 cards. //

-15