1st Quarter Exam Name Key

Simplify Each of the Following (Basic Skills)

1. $-22+(-15)-1=$ 1. -38

$-22-15-1$

-38

2. $8-(-7)+3=$ 2. 18

$8+7+3$

18

3. $2-(-8)-11=$ 3. -1

$2+8-11$

$10-11$

-1

4. $9\cdot-3\cdot0\cdot7=$ 4. 0

0

5. $5\cdot-3\cdot-2\cdot-3=$ 5. -90

$-15\cdot-2\cdot-3$

$30\cdot-3$

-90

6. $-7\frac{3}{11}+-2\frac{6}{11}--1\frac{6}{11}=$ 6. $-8\frac{3}{11}$

$-7-2+1 \;\vdots\; \frac{-3-6+6}{11}$

$-8 \;\vdots\; \frac{-3}{11}$

7. $\frac{-2}{3}-\frac{4}{12}+\frac{7}{24}=$ 7. $-17/24$

$\frac{-16}{24} \quad \frac{-8}{24} \quad \frac{+7}{24}$

$=-17/24$

8. $\frac{-3}{8}+2\frac{2}{5}-2\frac{3}{4}=$ 8. $-29/40$

$2-2 \;\vdots\; \frac{-15}{40} \quad \frac{16}{40} \quad \frac{-30}{40} = -29/40$

9. $-3\frac{1}{5}\cdot1\frac{1}{5}\div-\frac{2}{5}=$ 9. $+9\,3/5$

$\frac{-16}{5}\cdot\frac{6}{5}\cdot\frac{-5}{2} = \frac{-48}{5} = +9\,3/5$

10. $-2\frac{1}{5}\div3\frac{1}{2}\cdot\frac{1}{3}=$ 10. $-22/105$

$\frac{-11}{5}\cdot\frac{2}{7}\cdot\frac{1}{3} = \frac{-22}{105}$

Order of Operations

11. $\left(\frac{3}{4}-\frac{2}{3}\right)^2 \div \frac{7}{12}-\frac{1}{2}\cdot\frac{1}{6}$

$\left(\frac{9-8}{12}\right)^2 \cdot \frac{12}{7}-\frac{1}{2}\cdot\frac{1}{6}$

$\left(\frac{1}{12}\right)^2 \cdot \frac{12}{7}-\frac{1}{12}$

$\frac{1}{144}\cdot\frac{12}{7}-\frac{1}{12}$

$\frac{1}{12}\cdot\frac{1}{7}-\frac{1}{12}$

$\frac{1}{84}-\frac{7}{84}$

$\frac{-6}{84} = -1/14$

11. $-1/14$

12. $\frac{2}{3}\left[5(7-5)^2+(3\cdot 2)+2^2-1\right]$

$\frac{2}{3}[5(2)^2+6+4-1]$

$\frac{2}{3}[5(4)+6+4-1]$

$\frac{2}{3}[20+6+4-1]$

$\frac{2}{3}(29)$

$\frac{58}{3} = 19\frac{1}{3}$

12. $19\frac{1}{3}$

Properties and Identities

Match each of the following and **watch out for bad examples**

13. G commutativity over multiplication

14. B associativity of multiplication

15. D additive identity

16. A reflexive property

17. H distributive prop. from left over addition

18. C transitive property

19. E additive inverse

A. $4k + 5 = 4k + 5$ REFLEXIVE

B. $7*(2*1) = (7*2)*1$ ASSOC. MULT.

C. If $3(5) = 11 + 4$ and $11 + 4 = 15$ then $3(5) = 15$ TRANSITIVE

D. $X + 0 = X$ ADDITIVE IDENT

E. $4 + (-4) = 0$ ADDITIVE INVERS

F. $8 + (-8) = 17$ FALSE STATEMENT

G. $M*K + 5 = K*M + 5$ COMMUTATIVE MULT

H. $3(5x + 2) = 15x + 6$ DIST FROM LEFT OVER ADD

I. If $y+7 = 11$ then $11=y+7$ SYMMETRIC

Distribute and Combine Like Terms

20. $-9+5(2g+3)+3(4g-1)-11g$

$-9+10g+15+12g-3-11g$

$11g+3$

20. $11g+3$

21. $2(3t+8)-9(3t-5)$

$6t+16-27t+45$

$-21t+61$

21. $-21t+61$

22. $-(3r-2)+4(7r+3)$

$-3R+2+28R+12$

$25R+14$

22. $25R+14$

23. $2(5g+2)+3(2g-5)$

$10G+4+6g-15$

$16g-11$

23. $16g-11$

24. $-3(5h-2m)+14m$

$-15H+6M+14M$

$-15H+20M$

24. $-15h+20m$

Find the solution set

25. $3x+7<8x$

r = {-2, 0, 1, 3, 10}

-2: $1<-16$ F 3: $16<24$ T

0: $7<0$ F 10: $37<80$ T

1: $10<8$ F

25. $\{3, 10\}$

26. $4x+9>x^2$

r = {-3, -1, 2, 4, 9}

-3: $-3>9$ F 2: $17>4$ T

-1: $5>1$ T 4: $25>16$ T

9: $45>81$ F

26. $\{-1, 2, 4\}$

27. $2x+15=x^2$

r = {-5, -3, 1, 5, 8}

-5: $5=25$ F 1: $17=1$ F

-3: $9=9$ T 5: $25=25$ T

8: $31=64$ F

27. $\{-3, 5\}$

Function notation

$f(x)=3x-7$ $g(x)=x^2+4$ $h(x)=5x+2$

28. f(-5) $3[-5]-7=-22$

28. -22

29. g(2) + f(5)

$g(2)=2^2+4=8$ $8+8=16$

$f(5)=3(5)-7=8$

29. 16

30. h(0)

$h(0)=5(0)+2$

$=2$

30. 2

31. f(2) + g(1)

$f(2)=3(2)-7$ $g(1)=1^2+4$

$=6-7$ $=1+4$

$=-1$ $=5$

$-1+5=4$

31. 4

Solve each equation

32. $\left[\frac{5r-2}{-3}=4\right] \cdot -3$

$5R-2=-12$
$5R=-12+2$
$\frac{5R}{5}=\frac{-10}{5}$
$R=-2$

32_____

33. $3m+2=23$

$3m=23-2$
$\frac{3m}{3}=\frac{21}{3}$
$m=7$

33_____

34. $9m-5=67$

$9m=67+5$
$\frac{9m}{9}=\frac{72}{9}$
$m=8$

34_____

35. $\frac{k}{-2}-3=4$

$\frac{k}{-2}=4+3$
$-2\left[\frac{k}{-2}=7\right]$
$k=-14$

35_____

36. $\left[-7=\frac{4f-5}{3}\right]3$

$-21=4f-5$
$-21+5=4f$
$-16=4f$
$-4=f$

36_____

37. $6(7-3w)=5w-2$

$42-18w=5w-2$
$42+2=5w+18w$
$\frac{44}{23}=\frac{23w}{23}$
$1\frac{21}{23}=w$

37_____

38. $2(7z+3)-6=2(z-5)+4z$

$14z+6-6=2z-10+4z$
$14z=6z-10$
$14z-6z=-10$
$\frac{8z}{8}=\frac{-10}{8}$
$z=-1\frac{1}{4}$

38_____

39. $\frac{3}{5}(15t-35)+3t=\frac{-2}{3}(9t-12)+4$

$9t-21+3t=-6t+8+4$
$12t-21=-6t+12$
$12t+6t=12+21$
$\frac{18t}{18}=\frac{33}{18}$
$t=1\frac{5}{6}$

39_____

40. $8(2d-5)+11=13d+8$

$16d-40+11=13d+8$

$16d-29=13d+8$

$16d-13d=8+29$

$3d=37$

$d=12\frac{1}{3}$

40 $d=12\frac{1}{3}$

41. $\frac{2}{7}(28-21r)+3r=11r-(-7)$

$8-6R+3R=11R+7$

$8-3R=11R+7$

$8-7=11R+3R$

$1=14R$

$\frac{1}{14}=R$

41 $\frac{1}{14}=R$

42. $5(3a-2)=\frac{3}{4}(16a+20)$

$15A-10=12A+15$

$15A-12A=15+10$

$\frac{3A}{3}=\frac{25}{3}$

$A=8\frac{1}{3}$

42 $A=8\frac{1}{3}$

Solve each word problem, put final answer in box

43. Find **three consecutive odd integers** whose sum is (-21). Find the three integers.

FIRST: $2n+1$
SECOND: $2n+3$
THIRD: $2n+5$

FIRST + SECOND + THIRD $=-21$

$6n+9=-21$

$6n=-21-9$

$\frac{6n}{6}=\frac{-30}{6}$

$n=-5$

FIRST $=-9$
SECOND $=-7$
THIRD $=-5$

44. Find **three consecutive even integers** whose sum is 138. Find the three integers.

FIRST: $2n$
SECOND: $2n+2$
THIRD: $2n+4$

FIRST + SECOND + THIRD $=138$

$6n+6=138$

$6n=138-6$

$6n=132$

$n=22$

FIRST: 44
SECOND: 46
THIRD: 48

45. A **number** increased by <u>five times the difference,</u> of three and the twice number, is equal to seventeen less than, seven times that number. Find the number.

NUMBER: w

$w + 5(3 - 2w) = 7w - 17$

$w + 15 - 10w = 7w - 17$

$15 - 9w = 7w - 17$

$15 + 17 = 7w + 9w$

$32 = 16w$

$w = 2$

46. Find **four consecutive odd integers** whose sum is 72. Find the four integers.

FIRST: $2n+1$
SECOND: $2n+3$
THIRD: $2n+5$
FOURTH: $2n+7$

FIRST + SECOND + THIRD + FOURTH = 72

$8n + 16 = 72$

$8n = 72 - 16$

$8n = 56$

$n = 7$

FIRST: 15
SECOND: 17
THIRD: 19
FOURTH: 21

Simplify

47. $5 - (-8) - 11 =$

$5 + 8 - 11$

2 47. 2

48. $-4 \cdot -3 \cdot 2 \cdot 9 =$

$12 \cdot 2 \cdot 9$

$24 \cdot 9$

216 48. 216

49. $-3\frac{2}{3} + -7\frac{1}{2} - -2\frac{1}{3} + 5\frac{3}{4} =$

$-3 - 7 + 2 + 5$; $\frac{-8 - 6 + 4 + 9}{12} = -3\frac{1}{12} = -3\frac{1}{12}$ 49. $-3\frac{1}{12}$

50. $-2\frac{1}{3} \cdot 3\frac{3}{4} \div 2\frac{1}{3} =$

$-\frac{7}{3} \cdot \frac{15}{4} \cdot \frac{3}{7} = -3\frac{3}{4}$ 50. $-3\frac{3}{4}$

Function notation

$f(x) = 3x - 8$ $g(x) = x^2 - 9$ $h(x) = x^2 - 3x + 5$

51. $f(-1) = 3[-1] - 8 = \boxed{-11}$ 51. -11

52. $g(2) + f(3)$ $-5 + 1 = \boxed{-4}$ $g(2) = 2^2 - 9 = -5$ 52. -4

53. $h(5)$ $h(5) = 5^2 - 3(5) + 5 = 25 - 15 + 5 = \boxed{15}$ $f(3) = 3(3) - 8 = 1$ 53. 15

54. $f(1) + g(3)$

$f(1) = 3(1) - 8 = -5$

$g(3) = 9 - 9 = 0$

$-5 + 0 = \boxed{-5}$ 54. -5

Function notation

$f(x) = 5x - 2$ $\quad g(x) = x^2 + 1$ $\quad h(x) = |x - 11|$ $\quad w(x) = 3x + 4$

55. f(p) = 5p − 2 $\quad h(0) = |0-11| = 11$ $\quad h(11) = |11-11| = 101$ $\quad h(0) = 11$ — 55. 5p − 2

56. h(h(h(0))) — 56. 11

57. h(5) $\quad h(5) = |5-11| = |-6| = 6$ — 57. 6

58. f(m + 5) + w(2m + 7) + f(3m + 1) — 58. 26m + 51

$5[m+5] - 2 + 3[2m+7] + 4 + 5[3m+1] - 2$

$5m + 25 - 2 + 6m + 21 + 4 + 15m + 5 - 2$

$26m + 51$

Distribute and Combine Like Terms

59. $-10 + 5(3k + 4) - 2(5k - 9) - 12k$ — 59. $-7k + 28$

$-10 + 15k + 20 - 10k + 18 - 12k$

$-7k + 28$

60. $5(2x + 7) - 2(5x - 1)$ — 60. 37

$10x + 35 - 10x + 2$

37

Solve each equation

61. $\frac{2}{7}(21 - 35m) + 2m = 7m - (-6)$ — 61. 0 = m

$6 - 10m + 2m = 7m + 6$

$6 - 8m = 7m + 6$ $\quad 0 = m$

$6 - 6 = 7m + 8m$

$0 = 15m$

62. $\left[\frac{2}{3}n + \frac{4}{5} = \frac{1}{2}n - \frac{3}{5}\right] 30$ — 62. $n = 8\frac{2}{5}$

$20n + 24 = 15n - 18$

$20n - 15n = -18 - 24$

$\frac{5n}{5} = \frac{42}{5}$

$n = 8\frac{2}{5}$

63. $\left[\frac{1}{2}z - \frac{2}{3}(4z + 1) = \frac{1}{2} - \frac{3}{4}(2z - 3)\right] 12$ — 63. $-5\frac{1}{8} = z$

hint: remember that if one were to multiply the entire equation by some value, what is in the parentheses is shielded.

$6z - 8(4z+1) = 6 - 9(2z - 3)$

$6z - 32z - 8 = 6 - 18z + 27$

$-26z - 8 = 33 - 18z$

$-8 - 33 = -18z + 26z$

$-41 = 8z$

$\frac{-41}{8} = \frac{8z}{8}$

$-5\frac{1}{8} = z$

64. $\left[\frac{11h-1}{2}=\frac{5h+2}{3}+\frac{3h-4}{6}\right]6$

64. $h = 3/20$

$3(11h-1) = 2(5h+2) + (3h-4)$

$33h-3 = 10h+4+3h-4$

$33h-3 = 13h$

$33h-13h = 3$

$20h = 3$

$\frac{20h}{20} = \frac{3}{20}$

$h = 3/20$

65. $\left[\frac{2g-1}{5}=\frac{4g+5}{2}-\frac{5g-3}{4}\right]20$

65. $-9\frac{6}{7} = g$

$4(2g-1) = 10(4g+5) - 5(5g-3)$

$8g-4 = 40g+50-25g+15$

$8g-4 = 15g+65$

$-4-65 = 15g-8g$

$-69 = 7g$

$-9\frac{6}{7} = g$

66: The attendance at a soccer match was 250 people. Student tickets cost \$3.00 and adult tickets cost \$4.00. If \$830 was collected how many of each type of ticket was sold.

Type	Amount	Price \$	Total	
Adult	A	4	4A	T_A
Student	250 − A	3	3(250 − A)	T_S
	250		830	T_M

$T_A + T_S = T_M$

$4A + 3(250-A) = 830$

$4A + 750 - 3A = 830$

$A = 80$

ADULTS: 80

STUDENTS: 170

67. $\frac{3}{7}(21y-14)-\frac{2}{9}(27y-81)=\frac{3y+2}{2}-\frac{2y-1}{4}+\frac{4y+3}{5}$

SEE NEXT PAGE FOR WORK

67. _____

Hint: **Simplify the left side of equation first,** then worry about the fractions on the right side of the equation.

67.] $\frac{3}{7}(21y-14) - \frac{2}{9}(27y-81) = \frac{3y+2}{2} - \frac{2y-1}{4} + \frac{4y+3}{5}$: EXPAND LEFTHAND SIDE

$9y - 6 - 6y + 18 = \frac{3y+2}{2} - \frac{2y-1}{4} + \frac{4y+3}{5}$: COMBINE LIKE TERMS

$\frac{3y+12}{1} = \frac{3y+2}{2} - \frac{2y-1}{4} + \frac{4y+3}{5}$: CONSIDER L.H.S. LIKE A FRACTION

$20\left[\frac{3y+12}{1} = \frac{3y+2}{2} - \frac{2y-1}{4} + \frac{4y+3}{5}\right]$: MULTIPLY BY COMMON DENOMINATOR

$20(3y+12) = 10(3y+2) - 5(2y-1) + 4(4y+3)$: BRING DOWN NUMERATOR'S UNCHANGED, THEN DISTRIBUTE.

$60y + 240 = 30y + 20 - 10y + 5 + 16y + 12$

$60y + 240 = 36y + 37$: COMBINE LIKE TERMS

$60y - 36y = 37 - 240$: MOVE VARIABLES TO ONE SIDE OF EQUATION, CONSTANTS TO OTHER

$\frac{24y}{24} = \frac{-203}{24}$

$y = -8\ 11/24$