Math 9 Final Review Ans.

a1) whole #: $1, 0, 225, \sqrt{9}, \frac{9}{1}$

b) rational #: $-2.5, \frac{9}{1}, 1, -10, \sqrt{9}, 3\frac{5}{7}, 225$

c) natural #: $1, \sqrt{9}, 225, \frac{9}{1}$

d) integers: $\frac{9}{1}, 1, -10, \sqrt{9}, 0, 225$

e) irrational: $\sqrt{2.5}$, $1.01001000 1\ldots$

f) real #: $-2.5, \frac{9}{1}, 1, -10, \sqrt{9}, \sqrt{2.5}, 0, 1.01001000 1\ldots, 3\frac{5}{7}, 225$

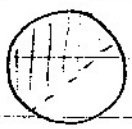
2a) 2

b) 2

c) 6

d) $\sqrt{8.1}$ is irrational

e) $\sqrt{-4}$ can't be simplified

3) 

$A = \pi r^2 \times \frac{1}{2}$

$(50\pi = \frac{1}{2}\pi r^2)2$

$\frac{100\pi = \pi r^2}{\pi}$

$r^2 = 100$

$r = \sqrt{100}$

$= 10$

$\therefore d = 20\text{ cm}$

a4) $x^2 + x^2 = 8^2$

$2x^2 = 64$

$x^2 = 32$

$x = \sqrt{32}$

$\sqrt{25}$ $\sqrt{32}$ $\sqrt{36}$

5 6

$\sqrt{32} \approx 5\frac{7}{11}$ $11\overline{)7.0}$ (.66, 66)

$\sqrt{32} \approx 5.7$

b) $\sqrt{9.25} \approx 3.1$

c) $\sqrt{2} \approx 1.3$

d) $\sqrt{72} \approx 8.5$

a5) 1

b) $x+1$

c) 2

d) 1

e) b

f) 1

g) -1

a6) 144

b) -64

c) 64

d) 15

e) ~~6~~ 3

f) -1

a7) >

b) ~~=~~ >

c) <

d) >

a8) 26

b) -52

c) 6

d) -25

e) $\frac{1}{a^2}$

f) ~~64~~ 80

g) $-\frac{8}{3}$

h) -36

8i) 4^{k+13}

j) 441

k) 100

l) $-64/27$

m) 25^{3m-4} or 5^{6m-8}

n) 2^{-9a-9}

9) $-0.\overline{3}, -0.\overline{303}, -0.\overline{30}, -0.\overline{300}, -0.3$

a10) >

b) >

c) <

d) =

a11) -2.53

b) 12.04

c) 9.4

d) -6.283

e) $\frac{32}{15}$

f) $-97/84$

g) $41/8$

h) $-271/36$

a12) -1.96

b) -136.53

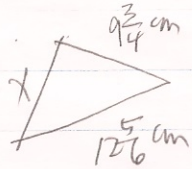
c) -26.75

d) -11.56

13) $10\frac{3}{4}\text{ cm} = 10.75\text{ cm} = 0.1075\text{ m}$

$h_{mom} = 1.9 - 0.1075$

$= 1.7925\text{ m}$

14) 

$P = 31\text{ cm}$

$31 = 9\frac{3}{4} + 12\frac{5}{6} + x$

$= \frac{271}{12} + x$

$x = 31 - \frac{271}{12}$

$= \frac{101}{12} \approx 8.4\text{ cm}$

15) a) $-\frac{121}{60}$
b) $-11/10$
c) $56/9$
d) 48
e) 6Y/15
f) $7/8$
g) $15/28$
h) $1426/695$ LoL whoops sorry

16) $4\frac{3}{4}$ cups of sugar

17) a) 36, 43, 50
b) 16, 21, 26
c) 4.6, 8.2, 11.8

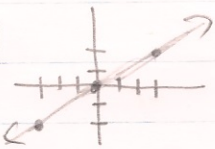
18) a) 351
b) 241
c) 166.6

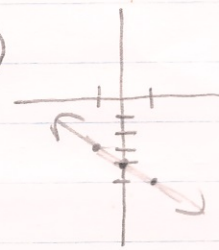
19) a) no
b) yes
c) no
d) no
e) yes

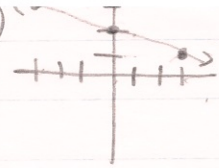
20) a) 4
b) -7
c) -1
d) 0

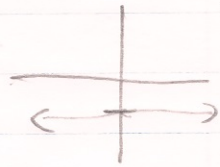
21) a) -2
b) $-\frac{1}{3}$
c) 0
d) no slope, $\emptyset$

22) a) $y = \frac{1}{2}x$
b) $y = -2x - 3$
c) $y = \frac{1}{2}x + 3$
d) $y = -4$
e) $x = -2.5$

23) a) 

b) 

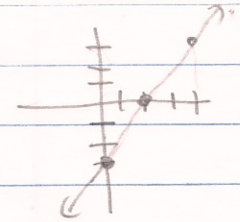
23c) 

d) 

e) $3x - 2y = 6$

$\frac{3x - 6}{2} = 2y$

$y = \frac{3}{2}x - 3$



24) $y = 650 + 0.08x$.

25) a) 0
b) 1
c) 5
d) 3

26) a) $-x^2 - x - 1$
b) $x^2 - 2x - 1$

27) a) $-3xy + 7y$
b) $x^2 + 2x - 1$
c) $7xy - 3x$
d) $30xy^2 + 7xy$
e) $-abc + 4a^2b + ab^2 - bc - 8ab$

28) a) $16x + 1$
b) 12π
c) $20\pi x^2 - 8\pi$

29) a) $-48x + 96$
b) $7x^3y - 56x^6$
c) $-54a^6b^4 - 66a^3b^{11}$
d) $36x^4y^3z^3 - 72xy^4z^4$

29e) $-2x^2-12xy+5y^2$

f) $24x^2-8x+12$

g) $4x+3y^5$

a30) $2x^2-11x+12$

b) $3x^2+6x+12$

c) x^2-6

a31) 1

b) $x-2$

c) $9x^2-6x-5$

a32) Look up in

k) workbook

a33) 52

b) 12

c) 26

d) 24

34) $823.50

a35) $880.77

b) $33.03

a36) $15.82

b) $1400.11

a37) $32.59/h

b) $2916.67

c) $22/h summer school

$31.48/h over entire year

38) $525+0.045(8950-5600)$

$=525+0.045(3350)$

$=525+150.75$

$=\$675.75$

39) Reg + OT = 12675

$325(30)+325(1.5)x=12675$

$9750+487.5x=12675$

$-9750 \qquad -9750$

$487.5x=2925$

$\frac{487.5x=2925}{487.5}$

$x=6$.

She worked 6h OT.

40) $\underset{\text{Reg}}{40(10.68)}+\underset{\text{OT}}{40(1.5)(62-40)}$

$=427.20+60(22)$

$=427.20+1320$

$=\$1747.20$

41) Let x be reg. pay rate

Reg + OT = 1128

$35x+8(1.5)x=1128$

$35x+12x=1128$

$\frac{47x=1128}{47}$

$x=24$

Ripley's wage is $24/h.

42) $36750 \div 26 = \$1413.46$ per pay period

rate per hour: $\frac{\$1413.46}{2 \text{ weeks}} = \frac{\$1413.46}{37(2)\text{ h}} = \frac{\$19.10}{1\text{ h}}$

74 h

Pay = Reg + OT

$=1413.46+19.10(2)5$

$=\$1604.46$

43) $I = Prt$

$= 3250(0.0375)\frac{16}{12}$

$= \$162.50$ //

44) $A = P + I$ $\quad I = Prt$

$4000 = 2000 + I$ $\quad 2000 = 2000(.08)t$

$I = 2000$ $\quad 2000 = 160t$

$t = \frac{2000}{160}$

$= 12.5\text{ y}$

$12.5\text{ y}\left(\frac{365\text{ d}}{1\text{ y}}\right) = 4562.5$ days //

45) $3 \times 16 = \$48$

$48/500 \times 100 = 9.6\%$ //

46) $I = Prt$ Oops, let's say for 1 year.

$\frac{154.73 = P(0.025)1}{0.025}$

$P = \$6189.20$ //

47) $A = P(1 + \frac{r}{n})^{nt}$

$= 6200\left(1 + \frac{0.075}{4}\right)^{4(3)}$

$= 6200(1.01875)^{12}$

$= 6200(1.249716377)$

$= \$7748.24$ //

48) $A = P(1 + \frac{r}{n})^{nt}$

$= 12000\left(1 + \frac{0.095}{12}\right)^{12(18)}$

$= \$65,902.30$ //

49) $A = P\left(1 + \frac{0.110}{12}\right)^{12(1)}$

$= P(1.104713\ldots)$

$A = P\left(1 + \frac{0.101}{4}\right)^{4(1)}$

$= P(1.10489075)$

compare using time = 1 year

compounded quarterly is better.

50) Simple Interest

$I = Prt$ $\quad A = P + I$

Let P = initial investment (principal)

$A = 3P$ so $A = P + I$

$3P = P + I$

$-P \quad -P$

$2P = I$

$I = Prt$

$\frac{(2P) = Pr8}{8P}$

$\frac{2P}{8P} = r$

$0.25 = r$

The interest rate is 25%.

a 51) 10.4

b) $\frac{22}{15}$

c) 55.5

d) $16/3$

e) $-1/9$

f) $324/95$

g) -8.98

h) 0.75

i) 6

j) $1/11$

k) $-100/9$

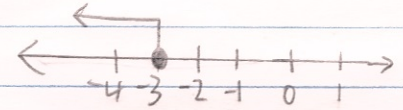
l) -30

m) -3

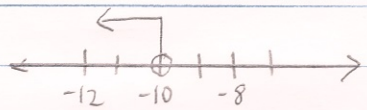
52) 191, 193, 195

53) 15 years of age

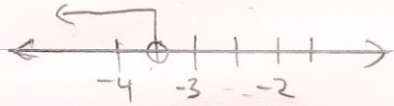
a 54) $x \leq -3$



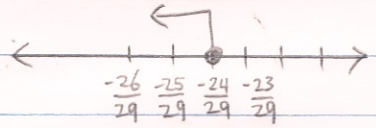
b) $x < -10$



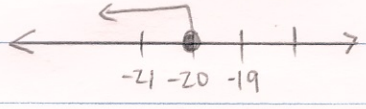
c) $x < -3.5$



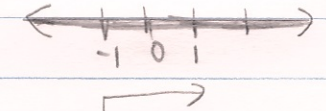
d) $x \leq -24/29$



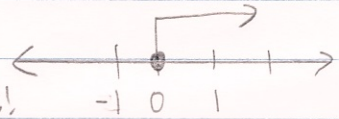
e) $x \leq -20$



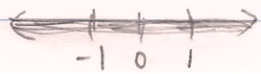
f) $1 > -5$ true so $\mathbb{R}$



g) $x \geq 0$ finally one like this!



h) $1 \geq 1$ true so $\mathbb{R}$



55) $450 + 24x < 2000$

$-450 \quad -450$

$24x < 1550$

$\frac{24x < 1550}{24}$

$x < 64.58\overline{3}$

64 people can attend the grad dinner.

56) mean: $\frac{557}{26} = 21.4$

median: $\frac{21+22}{2} = 21.5$

mode: 24

57) exaggerate area/volume
displace axis
irregular scale

a 58) 1H 1T 2H 2T 3H 3T
4H 4T 5H 5T 6H 6T

b) $\frac{3}{12} = \frac{1}{4}$

59) $1 - 0.45 = 0.55$

a 60) $\frac{6}{36} = \frac{1}{6}$

b) $\frac{2}{36} = \frac{1}{18}$

c) $\frac{6}{36} = \frac{1}{6}$

d) $10/36 = 5/18$

e) $18/36 = 1/2$

61) $\frac{12}{52} = \frac{3}{13}$

b) $\frac{1}{2}$

c) $\frac{1}{4}$

d) $\frac{3}{52}$ =

61 e) P(face) + P(♡) − P(face ♡)

$= \frac{12}{52} + \frac{1}{4} - \frac{3}{52}$

$= 11/26$

61 f) $\frac{40}{52} = 10/13$

g) 0

h) $\frac{3}{13}$

62) $SF = \frac{i}{o} = \frac{23}{45} = 0.51$ or $\frac{23}{45}$

63) $SF = \frac{i}{o} = \frac{19}{8} = 2.375$

64) $\frac{1}{9}^{\text{doll house}}_{\text{real}} = \frac{3_{cm}^{\text{doll house}}}{x_{\text{real}}}$

$x = 27$ cm That's a tiny chair!

65) 200m

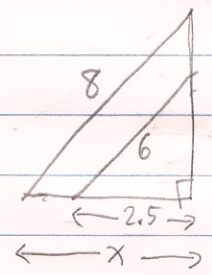
a 66) 16

b) 12

c) $x = 8$

$y = 24$

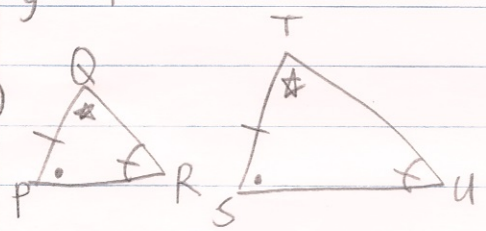
67)



$\frac{6}{2.5} = \frac{8}{x}$

$x = 3.3$ m //

68)



a) $\frac{PQ}{ST} = \frac{QR}{TU} = \frac{RP}{US}$

b) $\angle P = \angle S$

$\angle Q = \angle T$

$\angle R = \angle U$

a 69) $\frac{8}{3} = 2.67$ d) 30 g) not enough info

b) 27 e) 86°

c) 4 f) 42°