Mth 85 Practice Exam 1 *Franz Helfenstein* Name

Calculations with Integers: Combine and simplify to an **integer** or **fraction** (i.e. non-decimal)

1) $38 - 45 =$

2) $-22 - (-57) =$

3) $18 + (-43) =$

4) $-18 - 25 =$

5) $-8 + 9 + (-5) - (-6) =$

6) $22 - 38 - 67 + 35 - (-41) =$

7) $[3\cdot(5 - 11) + 8]\ 4 \div 20 - 15 =$

8) $8 - 4[3 - 11 + 6]6 - 4 =$

9) $\frac{7(-4)(9)}{6(42)(-5)} =$

10) $\frac{(-2)3 - 12}{9 - (-15)} =$

11) $\frac{8 - 2(4)}{6 - (2)(-3)} =$

12) $\frac{(-2)(-9) - 3(6)}{7 - 8} =$

13) $\frac{8 - 14}{3(-4) - (2)(-6)} =$

14) $\frac{3(-2) + 6}{(-2) - 2} =$

Absolute Values: Combine and simplify to an **integer** or **fraction** (i.e. non-decimal)

15) $|\ -11\ | =$

16) $|\ 27 - 48\ | =$

17) $20 - |\ 6 - 11\ |\cdot 10 - 5 =$

18) $|\ (-3)(8) - (6)(4)\ | =$

Exponents: Combine and simplify to an **integer** or **fraction** (i.e. non-decimal)

19) $-5^2 =$

20) $(-4)^2 =$

21) $33 - 3^4 =$

22) $(-4)^2 - 2\cdot 3^3 =$

Rationals: Combine and simplify to an **integer** or **fraction** (i.e. non-decimal)

23) $\frac{-1}{3} + \frac{2}{3} =$

24) $20 - 10\cdot(\frac{3}{4} - \frac{4}{5}) =$

25) $\frac{-1}{12} - \frac{-5}{6} =$

26) $6 - 6\,(\frac{1}{2} - \frac{2}{3}) =$

27) $\frac{-3^2}{4} + \frac{5}{12} =$

28) $1 - \frac{2^3 - 3^2}{4\cdot 6 - 5^2} =$

Calculator Problems: Give your answer as a **single decimal** accurate to the nearest **hundredth**

29) $[3.5(4.2 - 1.2) - 4.4]9.2 - 7.2 =$

30) $\frac{-2.4\cdot 2.9^2}{5.3 - 1.7} + 8.9 =$

31) $\dfrac{5.4 + \frac{2.5}{3.6}}{5.4 - \frac{8.2}{3.5}} =$

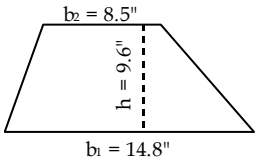
32) $\frac{2.6 - 3.4}{4.8 + 6.8} =$

33) $\frac{\sqrt{9.5} + 6.5}{\pi \times 6.5 \times 10^{12}} =$

34) $\sqrt{(3.6 \times 10^4)9.6} - 9.6 =$

35) H, the height of an object above the ground (in feet) is given by: $H = -16t^2 + v_0\cdot t + h_0$ where v_0 is the initial speed of the object, h_0 is its initial height and t is the elapsed time. Find the height, H, when t=4, v_0=100, h_0 = 25.

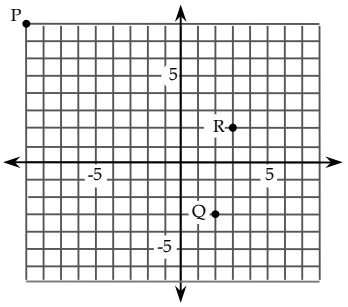
36) $V = \frac{b_1 + b_2}{2} \cdot h$ gives the area enclosed by a trapezoid.



What is the area of the trapezoid shown?

37) Write down the coordinates of the three points:

P = Q = R =



38) Plot and **label**:

A=(-8, 2) B=(7, 3) C=(-5,0)

Frank wants to make first tracks on the mountain so he gets up early, gets dressed and quickly drives off toward Mt. Bachelor. It's slow through town but once on Century Drive he drives very fast until he reaches a long string of cars moving quite slowly on the icy road. Frank slows to a crawl but the slow pace drives him nuts and so he begins passing the long string of slow moving cars **all together**. As he passes the 20th and last car in the long string his radar detector goes off. Busted! He quickly pulls in front of the last car and slows down but the damage is done. He won't have first tracks now....

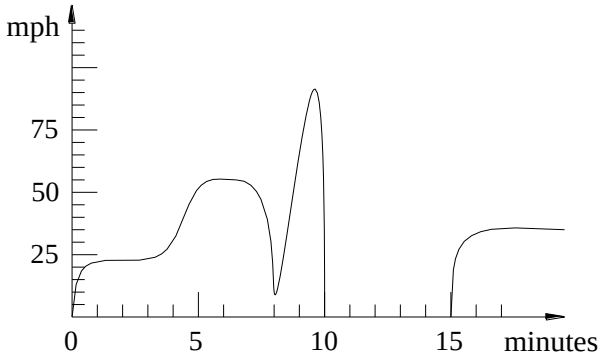
39) (a) How fast did Frank drive through town?

(b) How fast did he drive when he left town?

(c) Put a 'T' on the graph corresponding to where Frank begins tail-gating the long string of slow moving cars on the icy road.

(d) Put an 'X' where the radar detector must have gone off.

(e) How fast was he going when he got busted?



(f) How fast did he drive after the ticket?

40a) Round to 64ths: 0.13758

40b) Round to thousandths: 9.8765 + 37/64

41) What accuracy is necessary in the length & width to determine the area to nearest sq-ft given a rectangle ≈ 37 ft × 82 ft? Suppose you can only measure to the nearest 1/10 ft. What final accuracy can you expect?

42) What accuracy is necessary in the radius to determine the area to nearest sq-ft given a radius ≈ 215 ft? Suppose you can only measure to the nearest 1/10 ft. What final accuracy can you expect?

43) Convert:

(a) 65 mph => kph (b) 38 ft/sec => m/hr (c) 48 gal/min => ft^3/sec (d) 628 ft^3 => yd^3

(e) 72 lbs/in^2 => kg/m^2 (f) 7,890 L => gal (g) 980 cm => yds (h) 485 cm => ft-in nearest 16^{th}

44) What are the final units for: $\sqrt{\frac{2\ ft^2 + 7\ ft^2}{4\ sec}} \cdot \sqrt{\frac{9}{16\ sec}}$

45) Do these units make sense? Justify your answer. $\frac{5\ ft - a\cdot\sqrt{6\ ft^2 + 3\ sec^2}}{5\ lbs\cdot 9\ sec\cdot\sqrt{2}}$

46) Compute "f" with units: $f = \frac{1}{2\pi}\sqrt{\frac{g}{L}}$ g= 9.8 m/sec^2, L = 62 cm.

47) Compute "V" with units: $V = \frac{\pi R^2 H}{3}$ R= 1.6 m, H = 45 cm.

48) Compute "V" with units: $V = \frac{\pi H}{3}(r^2 + rR + R^2)$ r= 8", R=1 yd, H = 2 ft.

49) Compute "B" with units: $B = \frac{D}{\sqrt{1 + P^2}}$ D= 72' 7", P = 18%.

50) Compute to the nearest 16^{th} inch: (a) $32\cdot(5'\ 11\frac{7}{16}")$ (b) $(64'\ 7\frac{5}{16}")\div 5$

Mth 85 Practice Exam 1 *Franz Helfenstein* Name KEY

Answers must be clearly **legible**, **simplified** and **boxed** or **circled**. Show your work if you want partial credit. Unless otherwise stated write answer as an **exact integer**, a **fraction** or use two decimal accuracy. 100 points

Calculations with Integers: Combine and simplify to an **integer** or **fraction** (i.e. non-decimal)

1) $38 - 45 = -7$

2) $-22 - (-57) = 35$

3) $18 + (-43) = -25$

4) $-18 - 25 = -43$

5) $-8 + 9 + (-5) - (-6) = 2$

6) $22 - 38 - 67 + 35 - (-41) = -7$

7) $[3\cdot(5 - 11) + 8]\,4 \div 20 - 15 = -17$

8) $8 - 4[3 - 11 + 6]6 - 4 = 52$

9) $\frac{7(-4)(9)}{6(42)(-5)} = 1/5$

10) $\frac{(-2)3 - 12}{9 - (-15)} = -3/4$

11) $\frac{8 - 2(4)}{6 - (2)(-3)} = 0$

12) $\frac{(-2)(-9) - 3(6)}{7 - 8} = 0$

13) $\frac{8 - 14}{3(-4) - (2)(-6)} = \phi$

14) $\frac{3(-2) + 6}{(-2) - 2} = 0$

Absolute Values: Combine and simplify to an **integer** or **fraction** (i.e. non-decimal)

15) $|-11| = 11$

16) $|27 - 48| = 21$

17) $20 - |6 - 11|\cdot 10 - 5 = -35$

18) $|(-3)(8) - (6)(4)| = 48$

Exponents: Combine and simplify to an **integer** or **fraction** (i.e. non-decimal)

19) $-5^2 = -25$

20) $(-4)^2 = 16$

21) $33 - 3^4 = -48$

22) $(-4)^2 - 2\cdot 3^3 = -38$

Rationals: Combine and simplify to an **integer** or **fraction** (i.e. non-decimal)

23) $\frac{-1}{3} + \frac{2}{3} = 1/3$

24) $20 - 10\cdot(\frac{3}{4} - \frac{4}{5}) = 20\frac{1}{2}$

25) $\frac{-1}{12} - \frac{-5}{6} = 3/4$

26) $6 - 6(\frac{1}{2} - \frac{2}{3}) = 7$

27) $\frac{-3^2}{4} + \frac{5}{12} = -11/6$

28) $1 - \frac{2^3 - 3^2}{4\cdot 6 - 5^2} = 0$

Calculator Problems: Give your answer as a **single decimal** accurate to the nearest **hundredth**

29) $[3.5(4.2 - 1.2) - 4.4]9.2 - 7.2 = 48.92$

30) $\frac{-2.4\cdot 2.9^2}{5.3 - 1.7} + 8.9 = 3.29$

31) $\frac{5.4 + \frac{2.5}{3.6}}{5.4 - \frac{8.2}{3.5}} = 1.99$

32) $\frac{2.6 - 3.4}{4.8 + 6.8} = -0.07$

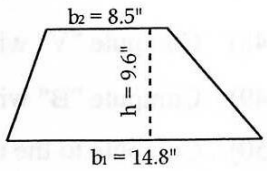
33) $\frac{\sqrt{9.5} + 6.5}{\sqrt{6.5} - 6.5} = -2.43$

34) $\sqrt{(3.6 - 2.6)9.6} - 9.6 = -6.50$

35) H, the height of an object above the ground (in feet) is given by: $H = -16t^2 + v_0\cdot t + h_0$ where v_0 is the initial speed of the object, h_0 is its initial height and t is the elapsed time. Find the height, H, when t=4, v_0=100, $h_0 = 25$. 169'

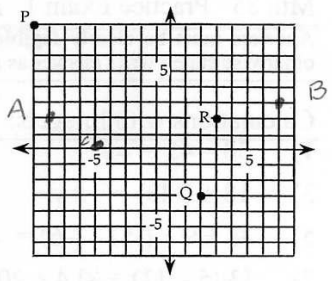
36) $V = \frac{b_1 + b_2}{2}\cdot h$ gives the area enclosed by a trapezoid.

What is the area of the trapezoid shown? 111.84 in^2



37) Write down the coordinates of the three points:

P = (-9 8) Q = (2, -3) R = (3, 2)



38) Plot and **label**:

A=(-8, 2) B=(7, 3) C=(-5,0)

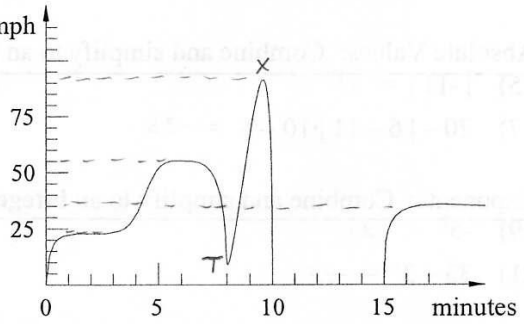
Frank wants to make first tracks on the mountain so he gets up early, gets dressed and quickly drives off toward Mt. Bachelor. It's slow through town but once on Century Drive he drives very fast until he reaches a long string of cars moving quite slowly on the icy road. Frank slows to a crawl but the slow pace drives him nuts and so he begins passing the long string of slow moving cars **all together**. As he passes the 20th and last car in the long string his radar detector goes off. Busted! He quickly pulls in front of the last car and slows down but the damage is done. He won't have first tracks now....

39) (a) How fast did Frank drive through town? 20-25 mph

(b) How fast did he drive when he left town? 55 mph

(c) Put a 'T' on the graph corresponding to where Frank begins tail-gating the long string of slow moving cars on the icy road.

(d) Put an 'X' where the radar detector must have gone off.



(e) How fast was he going when he got busted? ≈ 90 mph (f) How fast did he drive after the ticket? ≈ 35 mph

40a) Round to 64ths: 0.13758 9/64 40b) Round to thousandths: 9.8765 + 37/64 10.455

41) What accuracy is necessary in the length & width to determine the area to nearest sq-ft given a rectangle ≈ 37 ft x 82 ft? Suppose you can only measure to the nearest 1/10 ft. What final accuracy can you expect? 4 signif. digits (nearest 100th), nearest 10-place.

42) What accuracy is necessary in the radius to determine the area to nearest sq-ft given a radius ≈ 215 ft? Suppose you can only measure to the nearest 1/10 ft. What final accuracy can you expect?

43) Convert: 6 signif. digits, nearest 1000th, nearest 100-place

(a) 65 mph => kph 16th 105 kph (b) 38 ft/sec => m/hr 41,697 m/hr (c) 48 gal/min => ft^3/sec 0.12 cfs (d) 485 cm => ft, in nearest 15' $10\frac{15}{16}$"

(e) 72 lbs/in^2 => kg/m^2 50620 kg/m² (f) 7,890 L => gal 2084 gal (g) 980 cm => yds 10.7 yds (h) 628 ft^3 => yd^3 23.26 yd^3

44) What are the final units for: $\sqrt{\frac{2\text{ ft}^2 + 7\text{ ft}^2}{4\text{ sec}}} \cdot \sqrt{\frac{9}{16\text{ sec}}}$ 9/8 ft/sec

45) Do these units make sense? Justify your answer. $\frac{5\text{ ft} - a\cdot\sqrt{6\text{ ft}^2 + 3\text{ sec}^2}}{5\text{ lbs}\cdot 9\text{ sec}\cdot\sqrt{2}}$ no, cannot add $ft^2 + sec^2$

46) Compute "f" with units: $f = \frac{1}{2\pi}\sqrt{\frac{g}{L}}$ g= 9.8 m/sec², L = 62 cm. 0.63/sec

47) Compute "V" with units: $V = \frac{\pi R^2 H}{3}$ R= 1.6 m, H = 45 cm. 1.2 m^3

48) Compute "V" with units: $V = \frac{\pi H}{3}(r^2 + rR + R^2)$ r= 8", R=1 yd, H = 2 ft. 1.63 ft^3

49) Compute "B" with units: $B = \frac{D}{\sqrt{1+P^2}}$ D= 72' 7", P = 18%. 71' $5\frac{4}{16}$"

50) Compute to the nearest 16th inch: (a) $32\cdot(5'\ 11\frac{7}{16}")$ (b) $(64'\ 7\frac{5}{16}")\div 5$

190' $6\frac{0}{16}$" 12' $11\frac{1}{16}$"