Mini Equation Unit

(Substitute for Section ~~D~~ E of GRAPHING EQUATIONS)

7, 14, 21, 28 35

Name _____ Date _____

Practice Worksheet 3-1

Solving Equations: $x + a = b$

Solve each equation. Check your solution.

1. $m + 7 = 12$

2. $h + 3 = -5$

3. $y + 19 = 15$

4. $x + (-12) = 4$

5. $12 = t + 3$

6. $z + (-7) = -8$

7. $13 = z + 18$

8. $-13 = 6 + m$

9. $y + (-7) = -5$

10. $m + 18 = -9$

11. $c + (-11) = 0$

12. $n + 25 = 26$

13. $p + (-9) = -7$

14. $17 + k = 11$

15. $-8 + t = -12$

16. $y + (-39) = 17$

17. $u + 38 = 34$

18. $47 = -19 + p$

19. $35 = w + 35$

20. $0 = -16 + l$

21. $e + (-15) = 15$

22. $19 = g + (-8)$

23. $-15 = 15 + f$

24. $-9 = -4 + s$

25. $3 + r = -14$

26. $-204 + n = 215$

Name _____ Date _____

Practice Worksheet 3-2

Solving Equations: x − b = c

Solve each equation. Check your solution.

1. $x - 12 = 10$

2. $x - 15 = -6$

3. $y - (-13) = 14$

4. $z - (-12) = -28$

5. $n - 7 = 11$

6. $f + (-8) = 14$

7. $z + (-6) = -7$

8. $r + (-12) = 17$

9. $m - (-14) = -17$

10. $h - (-6) = 6$

11. $12 = m - 4$

12. $-14 = z - (-6)$

13. $-13 = t - (-8)$

14. $15 = c - 40$

15. $k - 17 = -8$

16. $-54 = c - 38$

17. $u - (-35) = 12$

18. $f - (-19) = -15$

19. $e - 39 = 19$

20. $i - 7 = -16$

21. $0 = j - 100$

22. $w - 12 = -12$

23. $t - (-47) = 61$

24. $-80 = b - 91$

25. $l - 13 = -19$

26. $j - (-8) = -13$

Name _____ Date _____

Practice Worksheet 3-4

Solving Equations: $\frac{x}{a} = b$

Solve each equation. Check your solution.

1. $\frac{c}{-6} = 14$

2. $\frac{y}{7} = 3$

3. $\frac{v}{-5} = 20$

4. $\frac{x}{-2} = -24$

5. $12 = \frac{s}{7}$

6. $13 = \frac{m}{-3}$

7. $\frac{w}{4} = -8$

8. $\frac{e}{-9} = -9$

9. $-1 = \frac{f}{20}$

10. $\frac{k}{5} = -14$

11. $-6 = \frac{z}{-7}$

12. $-8 = \frac{d}{-16}$

13. $9 = \frac{l}{-5}$

14. $-4 = \frac{n}{-5}$

15. $5 = \frac{r}{18}$

16. $\frac{w}{13} = -15$

17. $\frac{u}{-4} = 0$

18. $\frac{a}{-3} = -9$

19. $\frac{c}{4} = -11$

20. $12 = \frac{z}{6}$

21. $15 = \frac{k}{-5}$

22. $7 = \frac{h}{61}$

23. $\frac{i}{-6} = -51$

24. $-24 = \frac{l}{33}$

25. $\frac{s}{-65} = -14$

26. $\frac{k}{19} = 19$

27. $\frac{m}{-31} = 13$

28. $\frac{n}{-39} = -101$

29. $247 = \frac{x}{-48}$

30. $\frac{r}{98} = -249$

Name _____ Date _____

Practice Worksheet 3-3

Solving Equations: $ax = b$

Solve each equation. Check your solution.

1. $-4 = 4t$
2. $2g = -24$
3. $-16y = -16$
4. $7x = 63$
5. $-5z = 50$
6. $24 = -3m$
7. $0 = -9r$
8. $6p = -42$
9. $9x = 81$
10. $-7n = 49$
11. $4a = 36$
12. $-72 = 8k$
13. $-22 = -2e$
14. $28 = -7f$
15. $108 = 9l$
16. $-64 = -8t$
17. $10i = 110$
18. $-7z = 91$
19. $-8h = -112$
20. $12b = -84$
21. $9r = 522$
22. $-244 = 4q$
23. $-11s = -231$
24. $540 = 3f$
25. $-7x = 175$
26. $-96 = -8w$
27. $12y = 132$
28. $12u = -96$
29. $-14h = -182$
30. $225 = -15x$
31. $-12x = 156$
32. $-15q = -165$
33. $24e = 312$
34. $-36 = 36m$
35. $-12y = 288$
36. $17y = 136$
37. $-68a = -476$
38. $-17d = 323$
39. $-108 = -4t$

Name _____ Date _____

Practice Worksheet 7-2

Solving Two-Step Equations

Solve each equation. Check your solution.

1. $6x + 8 = 20$
2. $-10 - k = 36$
3. $15 = 7 - y$
4. $15 + 4g = -33$
5. $8 - z = 21$
6. $-9x - 36 = 72$
7. $4 - 5c = 64$
8. $8h + 7 = -113$
9. $15d - 21 = 564$
10. $2x + 5 = 5$
11. $14 = 27 - x$
12. $44 = -4 + 8p$
13. $3 + 6u = -63$
14. $33 = 5i - 12$
15. $19 = -3a - 5$
16. $-21 - 15m = 219$
17. $\frac{x}{12} - 15 = 31$
18. $6 - 5j = -94$
19. $-\frac{t}{5} - 3 = 17$
20. $15 + \left(-\frac{b}{4}\right) = 29$
21. $-\frac{k}{7} = 36$
22. $\frac{b}{15} = -30$
23. $-8 + \left(-\frac{c}{4}\right) = 48$
24. $-2d + 7 = 13$
25. $-\frac{e}{5} - 12 = -3$
26. $9 = -\frac{m}{2} + 14$
27. $-11 + \frac{z}{6} = 0$
28. $\frac{t + 2}{3} = -5$
29. $\frac{5 + r}{-2} = -6$
30. $\frac{f - 6}{5} = 0$
31. $\frac{s - 8}{-8} = -1$
32. $-10 = \frac{a + 3}{3}$
33. $-16 = \frac{c - 6}{-3}$

Vive la France!

1. Why did Pierre Jacques Marseille feel at home in a bakery?

H	E		W	A	S		F	R	E	N	C	H		B	R	E	D
11	7	1	−1	9	8	15	10	−20	7	2	−2	11	−16	−9	−20	7	−8

2. What do they call the famous French general who kept dynamite in his kitchen?

L	I	N	O	L	E	U	M		B	L	O	W	N		A	P	A	R	T
−3	5	2	3	−3	7	−6	−12	30	−9	−3	3	−1	2	14	9	−13	9	−20	−4

You've probably heard about the guy who fell off a bridge in Paris. He went in Seine. To find out about two other French citizens:

Solve each equation below and find your solution in the code. Each time the solution appears, write the letter of the exercise above it.

(S) $3n - 5 = 19$

(O) $4x + 2 = 14$

(C) $9y + 10 = -8$

(E) $2a - 15 = -1$

(T) $-5x + 7 = 27$

(I) $-8w + 4 = -36$

(A) $11 + 6k = 65$

(M) $7 + 3m = -29$

(D) $1 - 10x = 81$

(H) $2 - 7d = -75$

(U) $-4y - 9 = 15$

(W) $-8 + 12e = -20$

(F) $44 = 5x - 6$

(P) $-7 = 2n + 19$

(L) $31 = 4 - 9y$

(R) $-52 - 3u = 8$

(N) $-11r - 2 = -24$

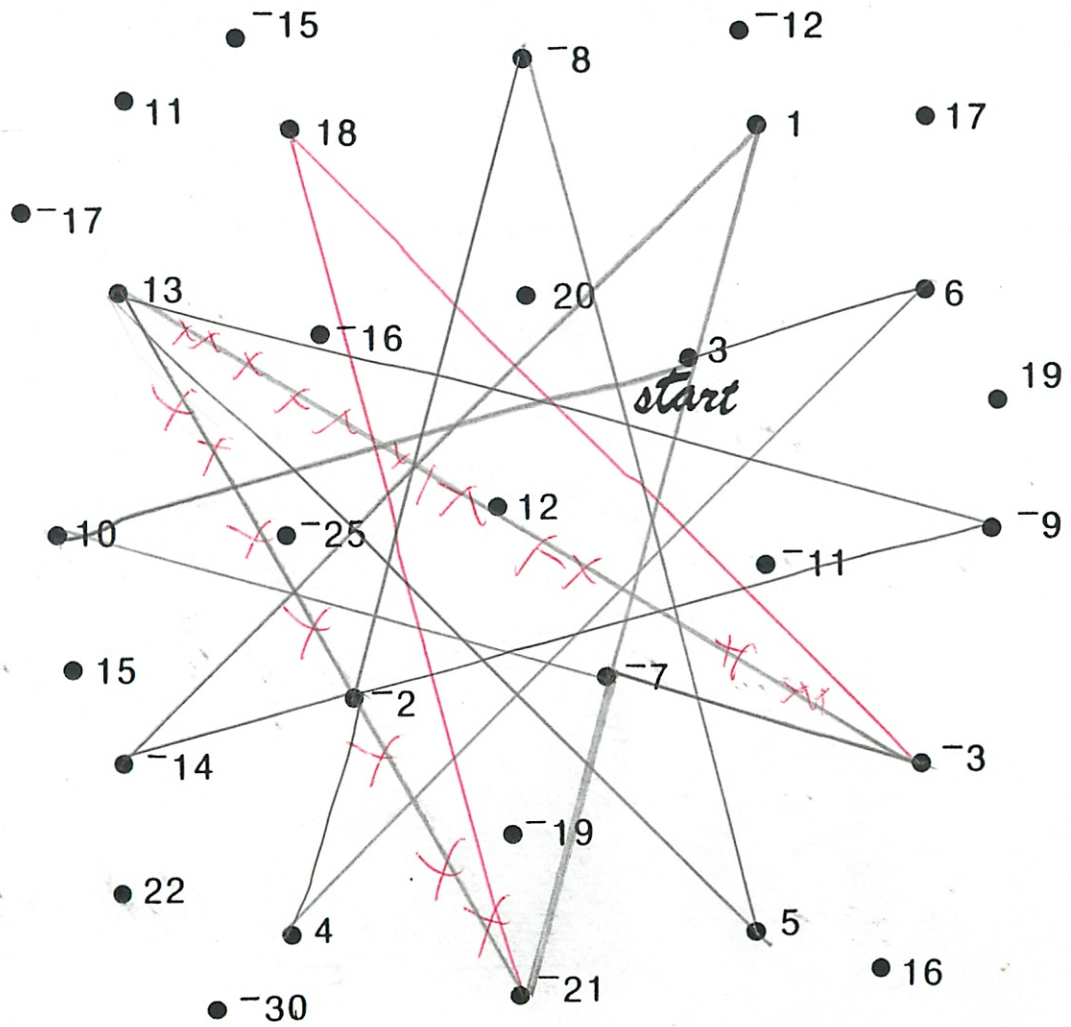
(B) $6 - x = 15$

Super Star

Remind about 11 + 12

Solve the equations at the right and find the solutions below. Connect the dots in the order of the numbered equations. You may go through the same dot more than once.

THIS PUZZLE WILL MAKE YOU A STAR!



① $5x + 6 = 2x + 15$ — 3

② $7x - 4 = 20 + 3x$ — 6

③ $2x + 15 = 43 - 5x$ — 4

④ $3 + 4x = 9x + 13$ — -2

⑤ $2x - 10 = 44 + 8x$ — -9

⑥ $-7x - 2 = 24 - 9x$ — 13

⑦ $27 - 11x = x - 33$ — 5

⑧ $21x + 6 = 17x - 26$ — -8

⑨ $11x = 8x - 6$ — -2

⑩ $-x - 29 = 13 + 2x$ — -14

⑪ $-18 + 5x = -12x - 1$ — (1

⑫ $-9x - 21 = 35 - x$ — (-7

⑬ $7x - 2 = -2x - 29$ — (-3

⑭ $36 + 15x = 17x$ — ~~13~~ 18

⑮ $-15 - 4x = 6 - 3x$ — (-21

⑯ $12x - 9 = 8x - 37$ — (-7

⑰ $-5x + 40 = 6x - 70$ — (10

⑱ $-x - 2 = 1 - 2x$ — (3

PRE-ALGEBRA WITH PIZZAZZ! BOOK DD

DD-40

All correct

Review I -- Equations Name: _____

Solve each equation. Check * problems. Show process on separate paper.

Put x in

1) $A + {}^{-}8 = 16$ $a = 24$

2) $B - 1 = {}^{-}29$ $b = -28$

3) ${}^{-}11c = {}^{-}132$ $c = 12$

4) $\frac{d}{-3} = 6$ $d = -18$

5) $3E + 8 = {}^{-}10$ $e = -6$ ✓*

6) $16 - 4F = {}^{-}72$ $f = 22$

7) $8 - \frac{G}{5} = 11$ $G = -15$

8) $2H + 6 = 3H + 9$ $h = -3$

9) ${}^{-}5K + 3 = 2K + 10$ $k = -1$ ✓*

10) $3M - 12 = 24 - 6M$ $m = 4$

11) $2N + 8 = {}^{-}3N - 15$ $h = -4.6$ ✓*

12) $6P + 11 = {}^{-}6P - 5$ $p = -1\frac{1}{3}$

13) $\frac{2}{3}Q + 5 = Q + 9$ $q = -12$

14) ${}^{-}9R - 11 + 5R = {}^{-}23$ $r = 3$

15) $2V + 7V + 5 - 3V = 18 + 4V - 1$ $v = 6$

#14 $-9r - 11 + 5r = -23$

$-9r + 5r - 11 = -23$

$-4r - 11 = -23$

$-4r - 11 + 11 = -23 + 11$

$-4r = -12$

$\frac{-4r}{-4} = \frac{-12}{-4}$

$r = 3$

#15 $2v + 7v + 5 - 3v = 18 + 4v - 1$

$2v + 7v - 3v + 5 = 18 - 1 + 4v$

$6v + 5 = 17 + 4v$

$6v - 4v + 5 = 17 + 4v - 4v$

$2v + 5 = 17$

$2v + 5 - 5 = 17 - 5$

$2v = 12$

$\frac{2v}{2} = \frac{12}{2}$

$v = 6$

Review II → Equations

Solve each equation. Check ★ problems. Show process on separate paper.

1 → $\sqrt{-5} + w = -11$ $w = -6$

2 → $-11 = w - 8$ $w = -3$

3 → $-128 = 8w$ $w = -16$

4 → $\frac{w}{-4} = 8$ $w = -32$

★ 5 → $-6 + 4w = -34$ $w = -7$

6 → $18 - 5w = -12$ $w = 6$

7 → $11 - \frac{w}{4} = -1$ $w = 48$

8 → $3w - 7 = 4w - 12$ $w = 5$

★ 9 → $-4w + 3 = 2w + 21$ $w = -3$

10 → $3w - 18 = 30 - 5w$ $w = 6$

11 → $2w + 10 = -3w - 20$ $w = -6$

12 → $4w + 7 = -4w - 49$ $w = -7$

13 → $\frac{3}{4}w + 1 = \frac{1}{2}w - 2$ $w = -12$

14 → $-6w - 5 + 2w = -32$ $w = 8$

15 → $3w + 8w + 6 - 2w = 15 + 5w - 13$ $w = -1$

$3w + 8w + 6 - 2w = 15 + 5w - 13$

$3w + 8w - 2w + 6 = 15 - 13 + 5w$

$9w + 6 = 2 + 5w$

$9w + 6 - 2 = 2 - 2 + 5w$

$9w + 4 = 5w$

$9w - 9w + 4 = 5w - 9w$

$4 = -4w$

$\frac{4}{-4} = \frac{-4w}{-4}$

$-1 = w$

---

1 → $w = -6$
2 → $-3 = w$
3 → $-16 = w$
4 → $w = -32$
5 → $w = -7$

6 → $w = 6$
7 → $w = 48$
8 → $5 = w$
9 → $-3 = w$
10 → $w = 6$

11 → $w = -6$
12 → $w = -7$
13 → $w = -12$
14 → $w = 8$
15 → $w = -1$

50/50 * 100%

Quiz -- Equations
(50 Points)

Name: Michael Plasmeier

Solve each equation. Be sure to show process.

1) $-6 + A = -15$

$-6+6+A = -15+6$

$A = -9$

2) $-3 = B - 8$

$-3+8 = B-8+8$

$5 = B$

3) $-9C = 45$

$\frac{-9C}{-9} = \frac{45}{-9}$

$C = -5$

4) $-7 = \frac{D}{-2}$

Good Thing I checked

$-7 \times -2 = \frac{D}{-2} \times \frac{-2}{1}$

$14 = D$

5) $-12 = -8 + 4E$

$-12+8 = -8+8+4E$

$-4 = 4E$

$\frac{-4}{4} = \frac{4E}{4}$

$-1 = e$

6) $9 - \frac{G}{2} = 5$

$9-9-\frac{6}{2} = 5-9$

$-\frac{6}{2} = -4$

$\frac{6}{-2} \cdot \frac{-2}{1} = -4 \times -2$

$6 = 8$

7) $18 - 3F = -24$

$18-18-3F = -24-18$

$-3F = -42$

$\frac{-3F}{-3} = \frac{-42}{-3}$

$F = 14$

7a) Check #7

$18 - 3F = -24$

$18 - 3(14) = -24$

$18 - 42 = -24$

$-24 = -24$

8) $4H + 7 = 5H + 11$

$4H+7-7 = 5H+11-7$

$4H = 5H + 4$

$4H-5H = 5H-5H+4$

$-H = 4$

$H = -4$

9) $-7K + 4 = 2K + 22$

$-7k+4-22 = 2k+22-22$

$-7k-18 = 2k$

$-7k+7k-18 = 2k+7k$

$-18 = 9k$

$\frac{-18}{9} = \frac{9k}{9}$

$-2 = k$

10) 3M - 18 = 37 - 8M

$3M - 18 + 18 = 37 + 18 - 8m$

$3m = 55 - 8m$

$3m + 8m = 55 - 8m + 8m$

$11m = 55$

$\frac{11m}{11} = \frac{55}{11}$

$m = 5$

10a) Check #10

$3m - 18 = 37 - 8m$

$3(5) - 18 = 37 - 8(5)$

$15 - 18 = 37 - 40$

$-3 = -3$

Answer the following using your knowledge of equations & solutions.

11) Without solving the equation, SHOW and EXPLAIN how we would know if R = 4 is the **solution** for the equation 7R - 14 = 2R + 6

$7R - 14 = 2R + 6$

$7(4) - 14 = 2(4) + 6$

$28 - 14 = 8 + 6$

$14 = 14$

I can tell that R=4 is the correct answer for the equation 7R-14=2R+6 because when I checked it, both sides came out even.

12) Write a **two-step** equation whose solution is W = 3

$w = 3$

$w - 7 = 3 - 7$

$w - 7 = -4$

Extra Stuff.

$w + 7w - 7 = -4 + 7w$

$w + 7w - 7 + 25 = -4 + 7w + 25$

$\frac{w + 7w - 7 + 25}{2} = \frac{-4 + 7w + 25}{2}$

$\frac{w + 7w - 7 + 25}{2} + 39 = \frac{-4 + 7w + 25}{2} + 39$

Would this be right?

$\frac{w + 7w - 7 + 25}{2} + 39 - 3w = \frac{-4 + 7w + 25}{2} + 39 - 3w$

NAME Michael Plasmeier

Yellow Texan

Find the number that solves each equation. Use that number to replace the letter in the ordered pairs.

A = $^-1 + ^-1$
B = $13 + ^-5$
C = $^-4 + 3$
D = $2 + 8$
E = $^-1 + 7$
F = $^-3 + ^-4$
G = $4 + ^-4$
H = $8 + ^-13$
J = $^-2 + ^-11$
K = $^-9 + ^-1$
M = $12 + ^-9$
N = $^-10 + ^-1$

A = -2
B = 8
C = -1
D = 10
E = 6
F = -7
G = 0
H = -5
J = -13
K = -10
M = 3
N = -11

(-4, 4)
(A, -6)
(-3, -6)
-5 (H, -8)
(-6, -8)
(F, F)
(F, H)
(-8, A)
(F, -4)
(H, -4)
(-4 , H)
(-3, H)
(A, -6)

(C, -8)
(C, N)
(1, J)
(C, H)
(3, -3)
(4, -4)
(E, F)
(5, K)
(4, -8)
(2, F)
(G, H)
(C, H)
(-3, 4)
(G, 4)

(1, M)
(1, 1)
(C, A)
(C, 0)
(-2, 1)
(-2, M)
(-3, 4)
(5, 4)
(2, 7)
(1, 7)
(-3, 4)
(-6, 4)
(F, M)
(-9, 3)

(K, 5)
(-9, 2)
(-7, 2)
(-4, 4)
STOP

(H, 4)
(F, 5)
(-6, E)
(-6, 7)
(-4, B)
(C, E)
(1, 7)
(1, 8)
(G, 9)

(A, 7)
(-4, B)
(G, 9)
(C, 11)
(-4, B)
(-6, 9)
(-4, 11)
(-3, D)
(A, D)
(C, 11)
(-2, 12)
(-4, 12)
(F, D)
(-6, 9)

(F, D)
(-8, 9)
(-8, 7)
(-6, 6)
STOP

(-8, 9)
(-9, 7)
(F, 5)
STOP

NAME Michael Plasmeier

The Little Nipper

(0, 3)
(2, 3)
(2, 4)
(-1, 8)
(-2, 6)
(0, 3)
(0, 2)
(-1, 1)
(1, -1)
(3, -1)
(5, 1)
(5, 4)
(4, 5)
(3, 5)
(2, 4)

STOP

(-7, 5)
(-6, 5)
(-6, 6)
(-2, 6)
(-1, 8)
(0, 9)
(-2, 12)
(-4, 13)
(-5, 12)
(-6, 12)
(-8, 10)
(-7, 9)
(-8, 9)
(-9, 8)
(-8, 8)

(-9, 7)
(-7, 5)
(-9, 3)
(-8, 3)
(-7, 1)
(-8, 0)
(-11, 0)
(-11, 2)
(-10, 3)
(-9, 3)

STOP

(-6, 5)
(-6, 2)
(-5, 2)
(-4, 3)
(-5, 4)
(-5, 2)

STOP

Color the triangle.

(-5, 4)
(-6, 3)
(-6, 2)
(-10, -2)
(-10, -3)
(-9, -4)
(-8, -3)
(-8, -2)
(-10, -2)

STOP

(-9, -4)
(-8, -5)
(-6, -4)
(-5, -3)
(-3, 0)
(-2, 0)

STOP

(-5, -3)
(-3, -1)
(-2, -1)
(-1, 0)
(-1, 1)

STOP

(-7, -4.5)
(-7, -6)
(-6, -7)
(-6, -11)
(-7, -12)
(-8, -12)
(-11, -15)
(-9, -15)
(-10, -14)
(-9, -15)
(-6, -15)
(-5, -14)
(-4, -14)
(-4, -13)
(-5, -12)
(-7, -12)
(-5, -12)

(-4, -10)
(-6, -8)
(-4, -10)
(1, -10)
(1, -12)
(3, -12)
(4, -13)
(3, -14)
(0, -14)
(-1, -15)
(-3, -14)
(-3, -13)
(-2, -12)
(1, -12)
(-1, -12)
(-1, -10)

STOP

(-1, -15)
(1, -16)
(3, -15)
(2, -14)

STOP

(5, 3)
(6, 3)
(7, 5)
(7, 6)
(9, 8)
(7, 9)
(6, 8)
(6, 9)

(7, 9)
(6, 8)
(6, 6)
(7, 6)
(8, 7)
(9, 6)
(9, 5)
(8, 3)
(8, 2)
(9, 0)
(9, -3)
(8, -4)
(8, -9)
(9, -9)
(10, -10)
(10, -11)
(9, -12)
(7, -12)
(7, -13)
(8, -14)
(9, -13)
(9, -12)
(6, -12)
(5, -11)
(6, -10)
(8, -10)
(8, -9)
(8, -10)
(7, -10)
(7, -8)
(6, -7)
(7, -4)

(7, 0)
(5, 2)

STOP

(4, -8)
(4, -10)
(1, -10)
(1, -11)
(3, -12)
(4, -11)
(4, -10)
(2, -10)
(4, -8)
(6, -7)

STOP

(-2, 2)
(-3, 3)
(-2, 4)
(-1, 3)
(-1, 2)
(-2, 2)
(-2, 4)

STOP

Color right side of eyes. Color nose.

Wrong

Michael Plasmeier

Texan

Do connect colours?

Nipper

Mrs. Somers,

I could not finish everything for home work in 30 min. I also had only 15 min to work on it in school, because Mrs. Fasturo had to go to a meeting about play rescheduling and we had to go with her. This lasted till 1:15, and at 1:30 we were dissmissed early due to snow. That is why I couldn't finish my work. Michael Plasmeier

CM

E7-5

NAME Michael Plasmeier MEET 5 EUCLIDEAN DIVISION MAR. 18, 1999 GRADE 7

30 MINUTES

ANSWER COLUMN

Directions: Place your answer to each question below in the answer column.

1) How much larger is $\frac{3}{4}$ of 20 than $\frac{5}{6}$ of 12? — 1) 5

2) If $a * b = \frac{a}{b+2}$ and $c \triangle d = \frac{d}{c-2}$, express $(35 * 3) \triangle 10$ in simplest form. — 2) 1050

3) If $4! = 4 \times 3 \times 2 \times 1 = 24$ and $5! = 5 \times 4 \times 3 \times 2 \times 1 = 120$, how much larger is $\frac{7!}{6!}$ than $\frac{5!}{4!}$? — 3) $3\frac{1}{4}$

4) When Kyle bought his tomato plant it was 4 inches tall. The plant grew $1\frac{3}{4}$ of an inch each week for 4 weeks and then $3\frac{1}{2}$ inches each week for 6 weeks. How tall was Kyle's tomato plant at the end of those 10 weeks? — 4) 44 in

5) A box contains 83 paper clips (20 red, 16 green, 15 brown, 12 white, 11 black and 9 purple). If clips are drawn out of the box at random, how many must be drawn out to guarantee that at least 14 clips are the same color? — 5) 74 clips

6) One day Tom, Dick and Harry worked for their father. Tom and Dick worked for the first two hours and were paid a total of \$25 which was the sum of their ages. Tom and Harry worked for the next two hours and were paid a total of \$27 which was the sum of their ages. Dick and Harry worked the last two hours and were paid a total of \$28 which was the sum of their ages. How old is Harry? — 6) 14 years old

T	D	H
13	12	14

T + D = 25, T + 12 = 25, T = 13

T + H = 27

D + H = 28

D + D = 26, D = 12

H is 2 more than D

D is 1 more than T

NAME Michael Plasmeier

Peace

Find the number that solves each equation. Use that number to replace the letter in the ordered pairs.

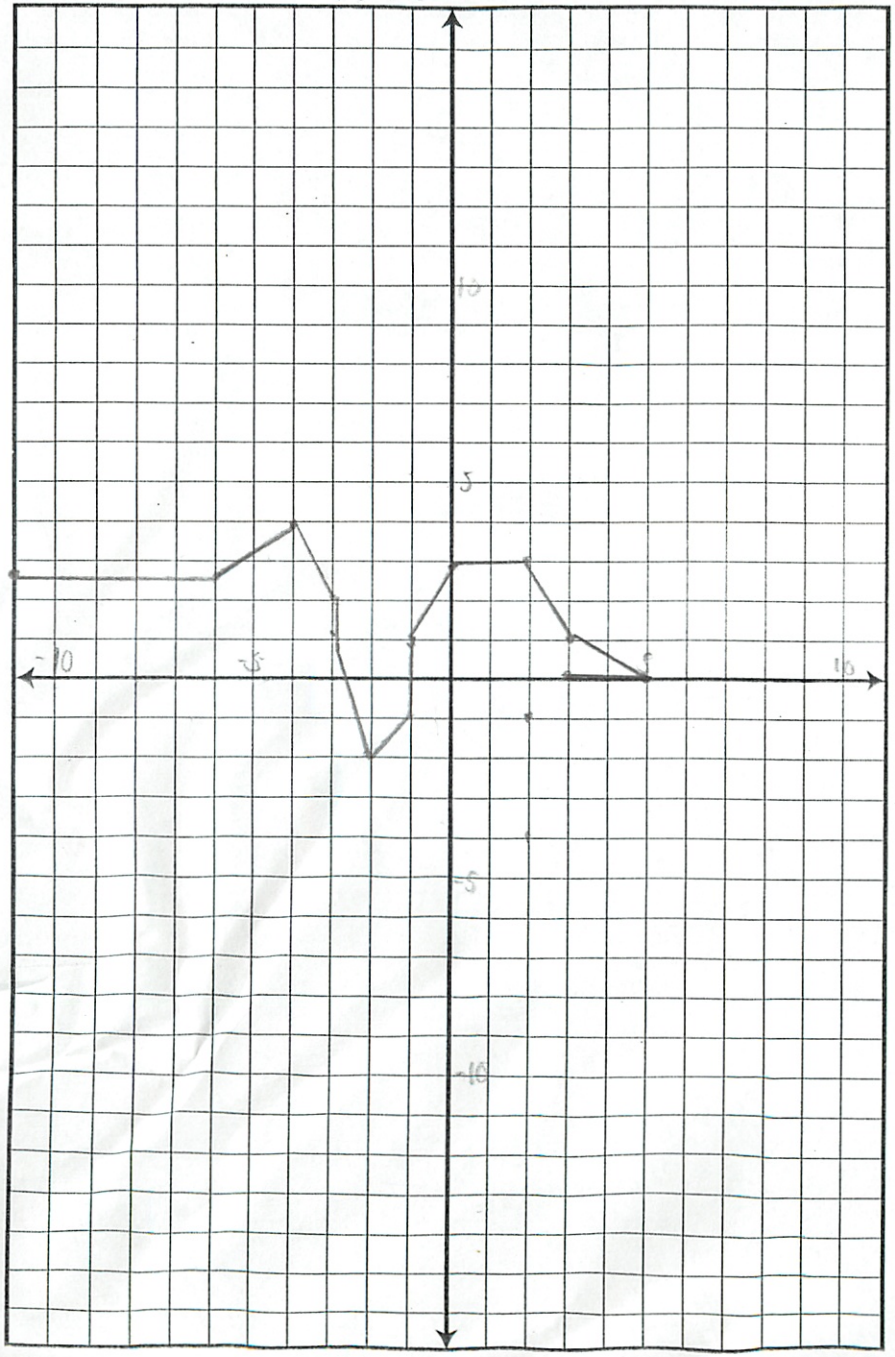
$3A = 8$
$2B = -22$
$15C = 30$
$-2D = -18$
$6E = 30$
$-10F = -100$
$5G = 0$
$-6H = -18$
$-2J = 2$
$-7K = 35$
$6M = 42$
$10N = -80$

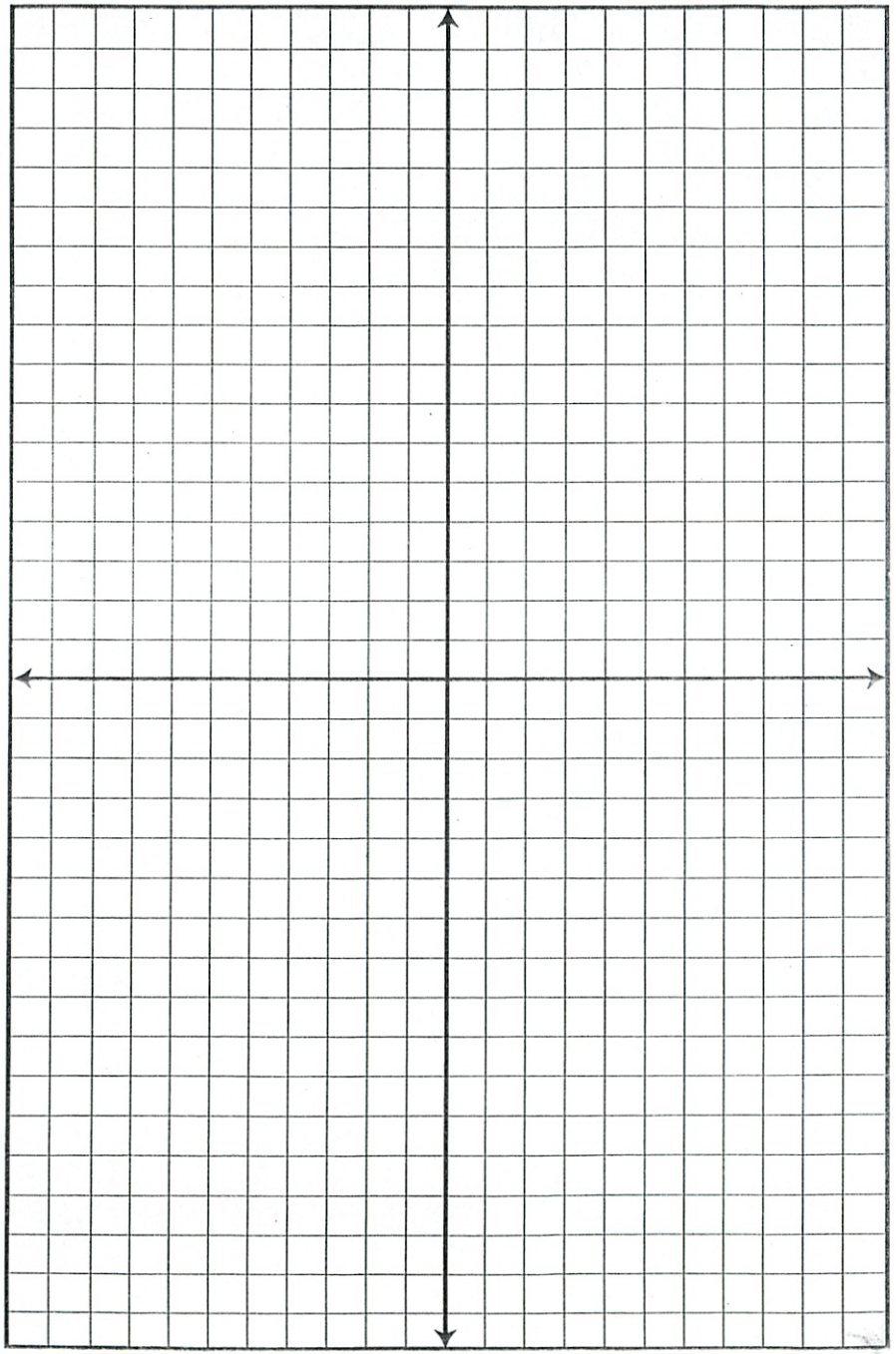
A = $2\frac{2}{3}$
B = -11
C = 2
D = 9
E = 5
F = 10
G = 0
H = 3
J = -1
K = -5
M = 7
N = -8

3, A)	(E, G)	(4, K)	(8, E)	(7, 8)	(E, E)
(-6, A)	(H, G)	(4, 0)	(D, E)	(8, D)	(A, A)
(-4, 4)	(C, -1)	**STOP**	(D, A)	(7, F)	(A, E)
(-3, C)	(C, -4)		(M, M)	(A, D)	**STOP**
(-3, -1)	(0, N)	(4, 0.5)	(D, 7)	(A, 8)	
(-2, -2)	(-4, -10)	(4, C)	(10, 8)	(E, D)	
(-1, -1)	(N, -10)	(A, 5)	(D, D)	(4, D)	
(-1, 1)	(B, N)	(A, 4)	(7, 8)	(4, 8)	
(G, H)	(B, A)	(M, H)	(7, 6)	(A, 7)	
(2, H)	**STOP**	(8, 4)	(6, 6)	(4, A)	
(H, 1)		(M, A)	(6, 8)	(4, E)	

Michael Plasmeier

Peace





E7-3

NAME Michael Plastreler MEET 3 EUCLIDEAN DIVISION JAN. 14, 1999 GRADE 7

30 MINUTES

ANSWER COLUMN

Directions: Place your answer to each question below in the answer column.

1) Find the number K represents if $\frac{(4)(5)K}{12} = 15$. 1) $k=4$

2) $5^3 = 5 \times 5 \times 5$; $5^4 = 5 \times 5 \times 5 \times 5$. How many times larger is 12×4^3 than 4^4? 2) 512

3) The average of 8 numbers is 20. Eight is added to one of the 8 numbers. The 8 numbers now have an average of _____. 3) 21

4) Mom and Pop's neighborhood store buy cough drops at \$3.50 for a dozen boxes. They sell cough drops for 69¢ a box. If they sell 3 dozen boxes of cough drops, what is their profit? 4) 14.34

5) Joan runs twice as fast as Sally. In a 200 yard race, Joan gives Sally a 40 yard head start (Sally will only have to run 160 yards). When Joan crosses the finish line, Sally is _____ yards behind her. 5) 60 yd

6) Two water tanks, one the shape of a cylinder and the other in the shape of a cone, are full of water. The cylindrical tank contains 600 gallons more than the conical tank. If 200 gallons of water is pumped from each tank then the cylindrical tank will contain twice as much water as the conical tank. How many gallons of water does the cylindrical tank contain when it is full? 6) 1200 gl

25/25 ★

Quiz --
Graphing Equations

Name: Michael Plasmeier

1) Write an equation for each line (Tower B's report and Tower A's report) shown in the graph.

Tower B

$y = mx + b$

$m = \frac{y}{x} = \frac{2}{1} \rightarrow 2$

$b = 5$

$y = 2x + 5$

$y = 2x + 5$

Tower A

$y = mx + b$

$m = \frac{y}{x} = \frac{-3}{1} \rightarrow -3$

$b = -5$

$y = -3x - 5$

$y = -3x - 5$

2) Use the equations (from #1) to find the fire !!!

$2x + 5 = -3x - 5$

$2x + 5 + 5 = -3x - 5 + 5$

$2x + 10 = -3x$

$2x - 2x + 10 = -3x - 2x$

$\frac{10}{5} = \frac{-5x}{-5}$

$-2 = x$

check

$y = -3x - 5$

$1 = -3(-2) - 5$

$1 = 6 - 5$

$1 = 1$

$y = 2x + 5$

$y = 2(-2) + 5$

$y = -4 + 5$

$y = 1$

$(-2, 1)$

3) What message would the rangers expect to receive from Tower C?

$y = mx + b$

$m = (0, 15)$

$(-2, 1)$

$[0 - -2, 15 - 1]$

$[2, 14]$

$\frac{y}{x} = \frac{14}{2} \rightarrow \frac{7}{1} \rightarrow 7$

$b = 15$

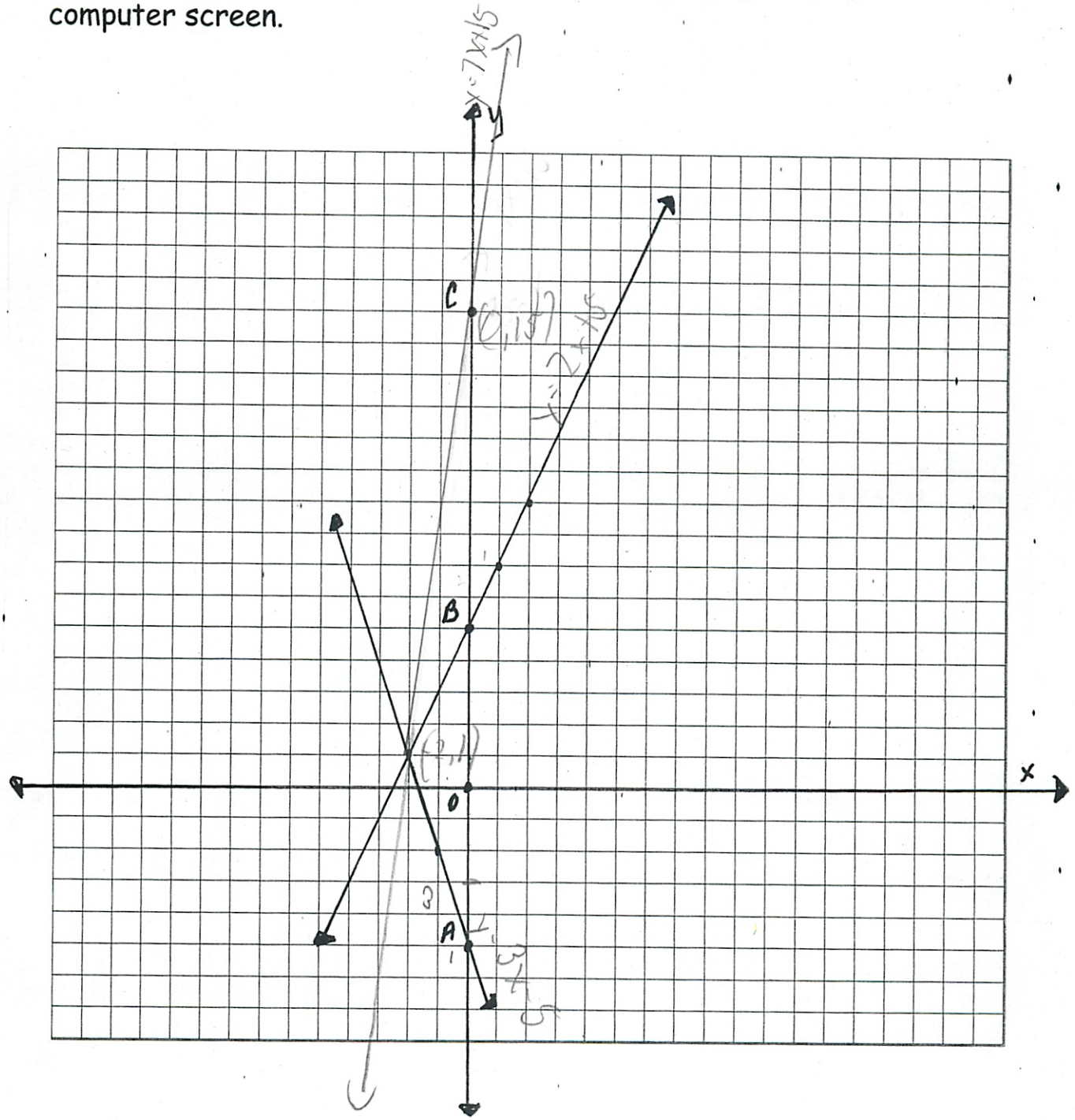
$y = 7x + 15$

Due Friday

Quiz --
Graphing Equations

Name: Michael Plasmeier

The park rangers' supervisor received the following displayed on her computer screen.



Math

Decision Making

The Choice is clear:

for Development of the Open space

Better Economy

Put Townhouses in for a better time.
Today

① Work in city, live in a close community

Poster by: Michael Plasmeier

Decision Making

Classwork	Homework
A. Feasible Plans (Pages 1 - 10)	
#s 1,4 - 6	#s 3 (due: Fri), 7 - 9
#s 10 - 13	#s 14 - 16
#s 17,18	#s 19,20
B. Fair Exchange (Pages 11 - 14)	
#s 1 - 4	Finish # 4
#s 5, 6 - 9	#s 7,8,10
Review sections A and B	
Quiz on sections A and B	
C. More Exchanging (Pages 15 - 20)	
#s 3,4	#s 1,2,6
D. More Constraints (Pages 21 - 26)	
#s 1 - 7	#s 8 - 11
#s 12,13	#s 14,15
Review Decision Making	
Quiz -- Decision Making	

*** THIS IS A TENTATIVE SCHEDULE ***

Name_____

Student Activity Sheet 1

Use with *Decision Making*, page 3.

6. Most houses in the Parkway neighborhood are about 12 meters by 8 meters. To understand how big this is, estimate the size of the parking lot shown below and then draw a typical house from Parkway on the parking lot.

Student Activity Sheet 2

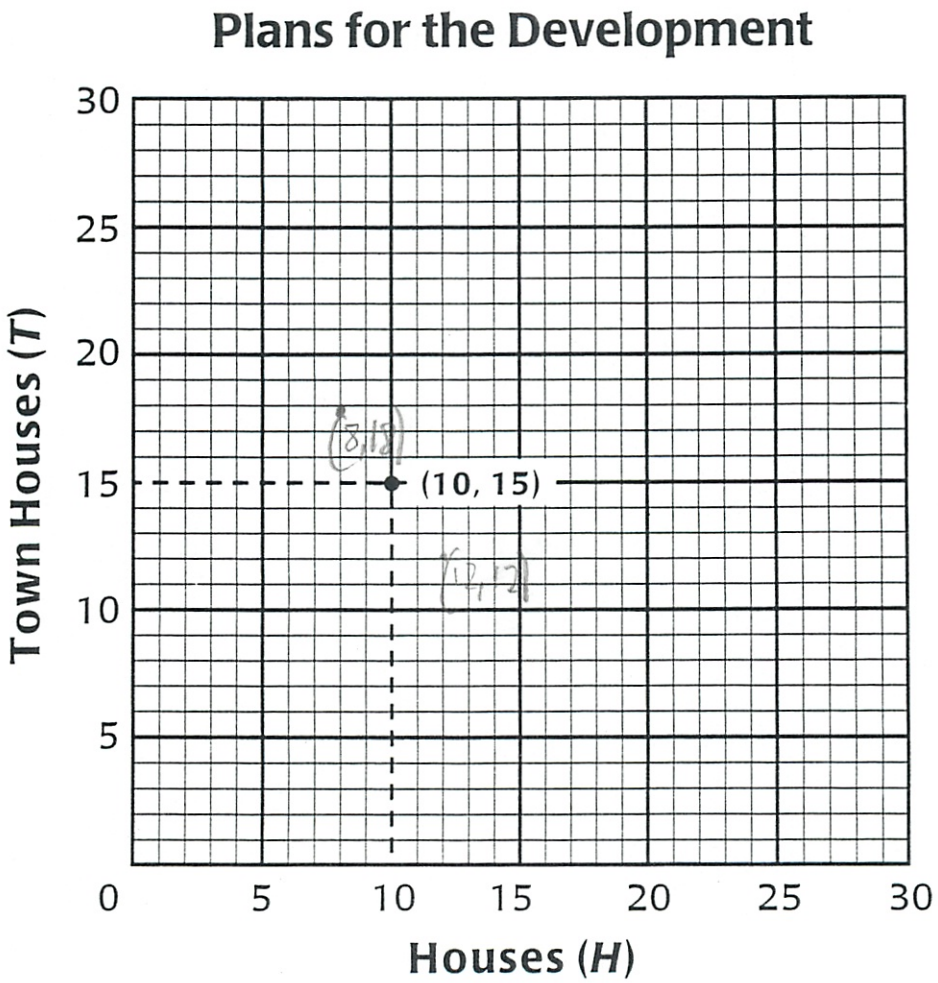
Name _____

Use with *Decision Making*, page 6.

10. c. Does the plan (8,18) work? Plot it on the graph shown below.

d. Is (18, 8) the same plan as (8, 18)? Why or why not?

e. Find another plan that will work and plot it on the graph shown below.



12/22

Student Activity Sheet 3

Name_____

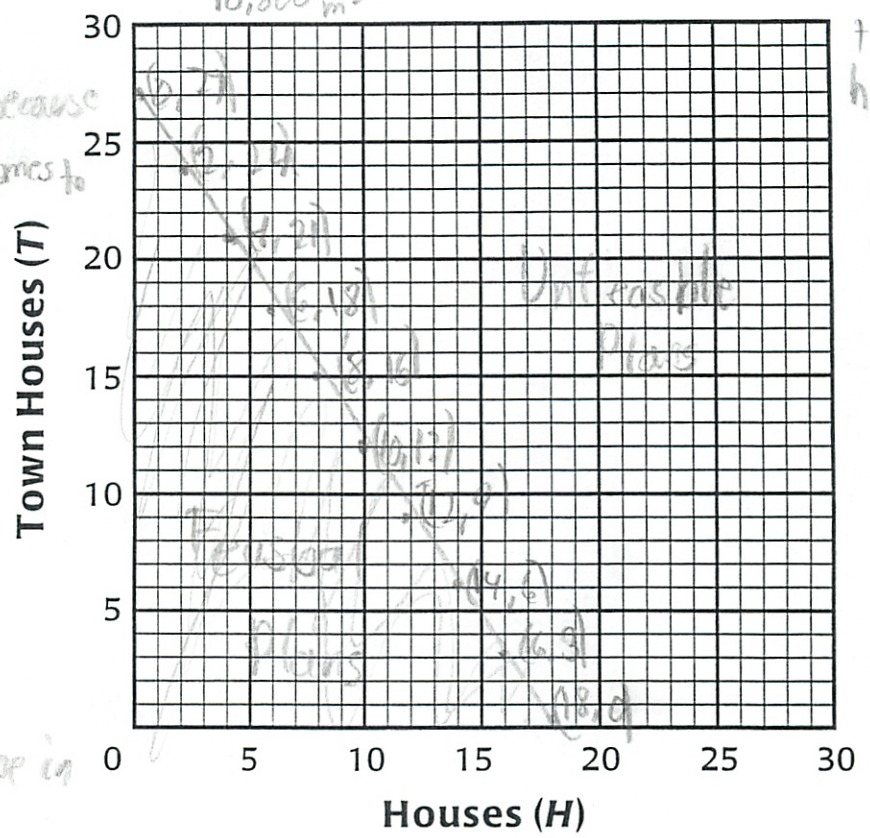
Use with *Decision Making*, pages 8, 11, 12, and 13.

#1) a)
(10,12) uses 10,800 m^2 because 10 H(600) and 12 T(400) comes to 10,800 m^2

b) Fair Exchange
600 → x2 → 1200 m^2
400 → x3 → 1200 m^2
$3T = 2h$
$\frac{T}{H}$ $\frac{-3}{2}$ or $\frac{3}{-2}$
[2,-3] or [-2,3]

c) The points correct on the slope in #b)

10,800 m^2



t = Townhouses
h = Houses

(0,27)
(2,24)
(4,21)
(6,18)
(8,16)
(10,12)
(12,9)
(14,6)
(16,3)
(18,0)

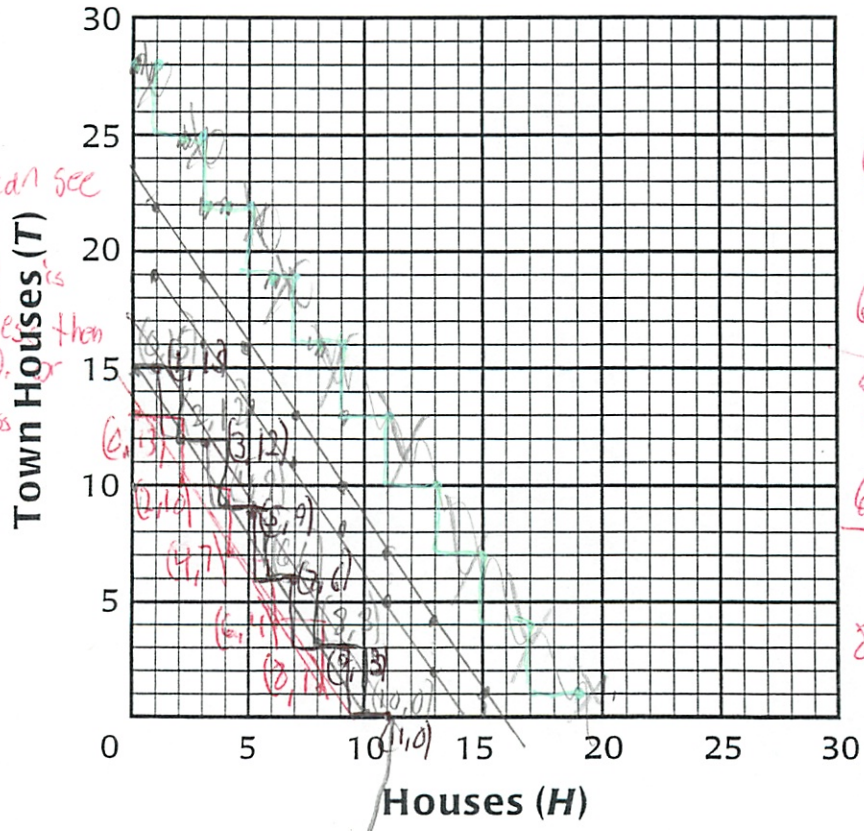
Unfeasible Plans

#15) a) 6000, 600H, 400T
(10,0)

b) See Graph

c) -5,200 m^2
(0,13)
-6,600 m^2
(11,0)
-8,200 m^2
(1,19)
-9400 m^2
(1,22)

You can see that 5200 is 800 less than 6000, or 2T less



5200 m^2
6100 - 2T or 400 m^2
6600 m^2
6000 + 1h or 600 m^2
8200 m^2
6600 + 1H or 1600 m^2
9400 m^2
8200 + 2h + 1200 m^2

82
-46
36

Review --
Decision Making (A & B)

Name: _____

I have $1200 in my savings account. According to my bank's rules and regulations, I must keep $100 in my account to avoid service charges (and I WANT to avoid service charges !). I now want to make a withdrawal (I have much shopping to do!). I only want to receive twenty-dollar bills and/or fifty-dollar bills. HELP !!!!

Let F represent the # of fifty-dollar bills & T represent the # of twenty-dollar bills.

1) Find the maximum money I may withdrawal (remember I do not want to pay service charges.)

2) Find (be sure to show process) and plot a point that uses this maximum money.

3) Find the fair exchange and use this to find all the points that use the maximum money. List **all** the points.

4) Considering the fact that I do not want to pay a service charge, **shade** the graph from #3 with two colors so that one color shows where all the "feasible withdrawals" are and the other color shows where all the "unfeasible withdrawals" are.

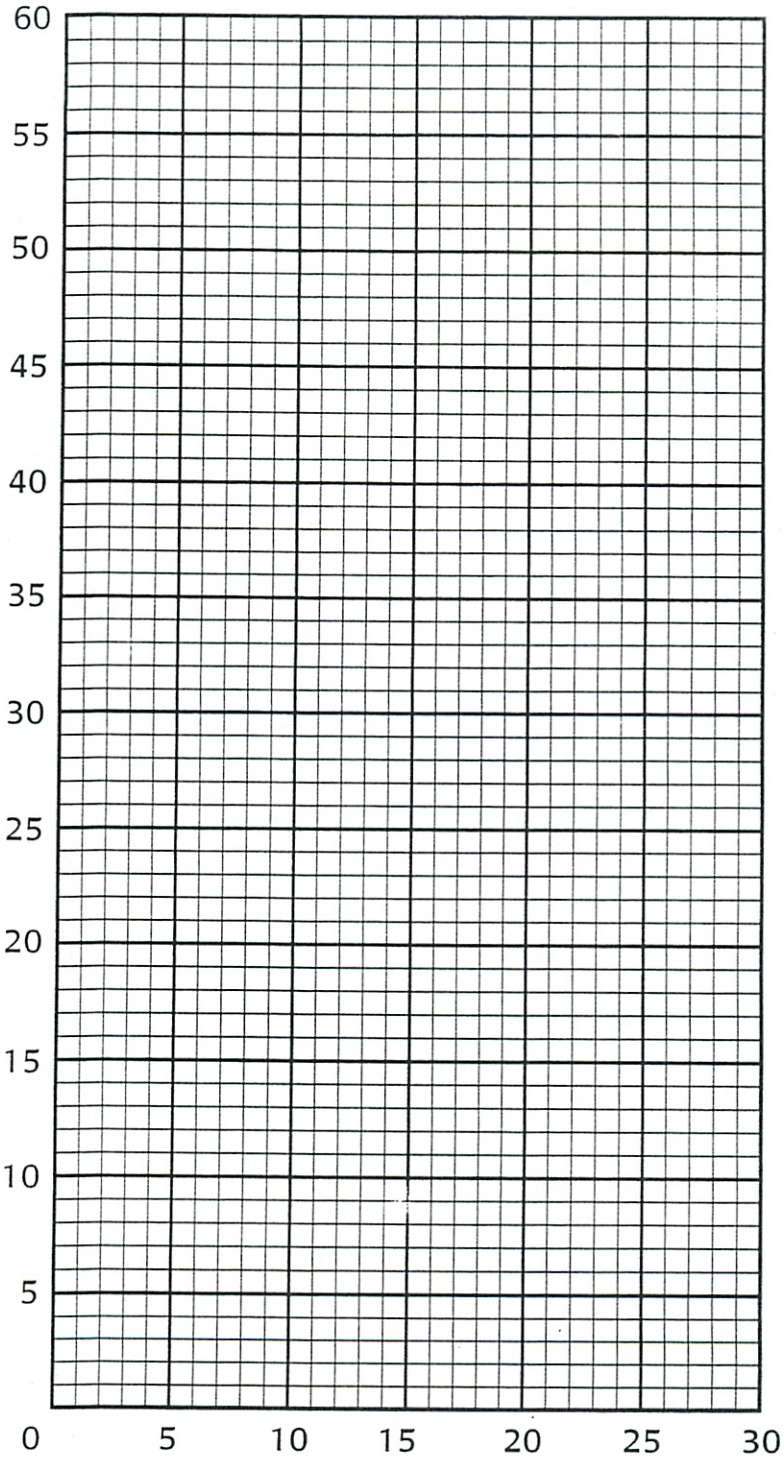
5) On the same graph, repeat the procedure used in problem #s 2 and 3 for maximum money of $1250 and $1430. (Do NOT list all points)

6) Label each "dividing line".

7) List the "constraints" that were used in these problems (ignore #4).

Review --
Decision Making (A & B)

Name: _____



Review 2-- Name: _____

Decision Making (A & B)

There is a plot of land (17,000 m^2) that needs to be developed. The developer has decided to build houses (500 m^2) and/or townhouses (300 m^2). He has also decided to develop a playground/park, using 2000 m^2. He needs HELP !!!

Let H represent the # houses & T represent the # of townhouses.

1) Find the maximum square meters he may develop with houses and or townhouses.

2) Find (be sure to show process) and plot a point that uses the maximum square meters.

3) Find the fair exchange and use this to find all the points that use the maximum square meters. List **all** the points.

4) Considering the fact that he wants to leave 2000 m^2 for the playground/park, **shade** the graph from #3 with two colors so that one color shows where all the "feasible plans" are and the other color shows where all the "unfeasible plans" are.

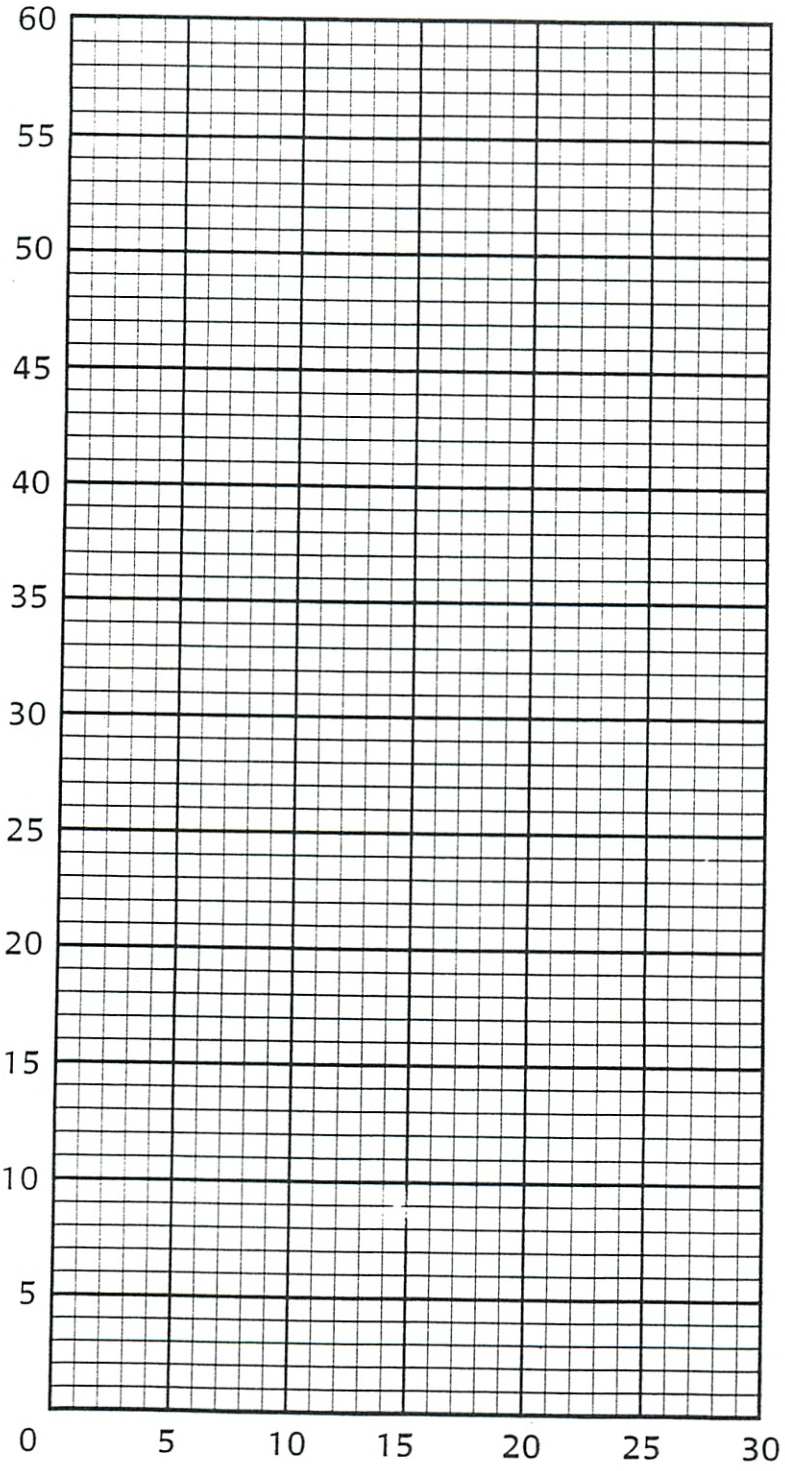
5) On the second graph, redraw (no shading) the graph you created from problem #s 2 and 3, then repeat the procedure used in problem #s 2 and 3 for maximum square meters of 12,900 m^2 and 11,900 m^2. (Do NOT list points)

6) Label each "dividing line".

7) List the "constraints" that were used in these problems (ignore #4).

Review --
Decision Making (A & B)

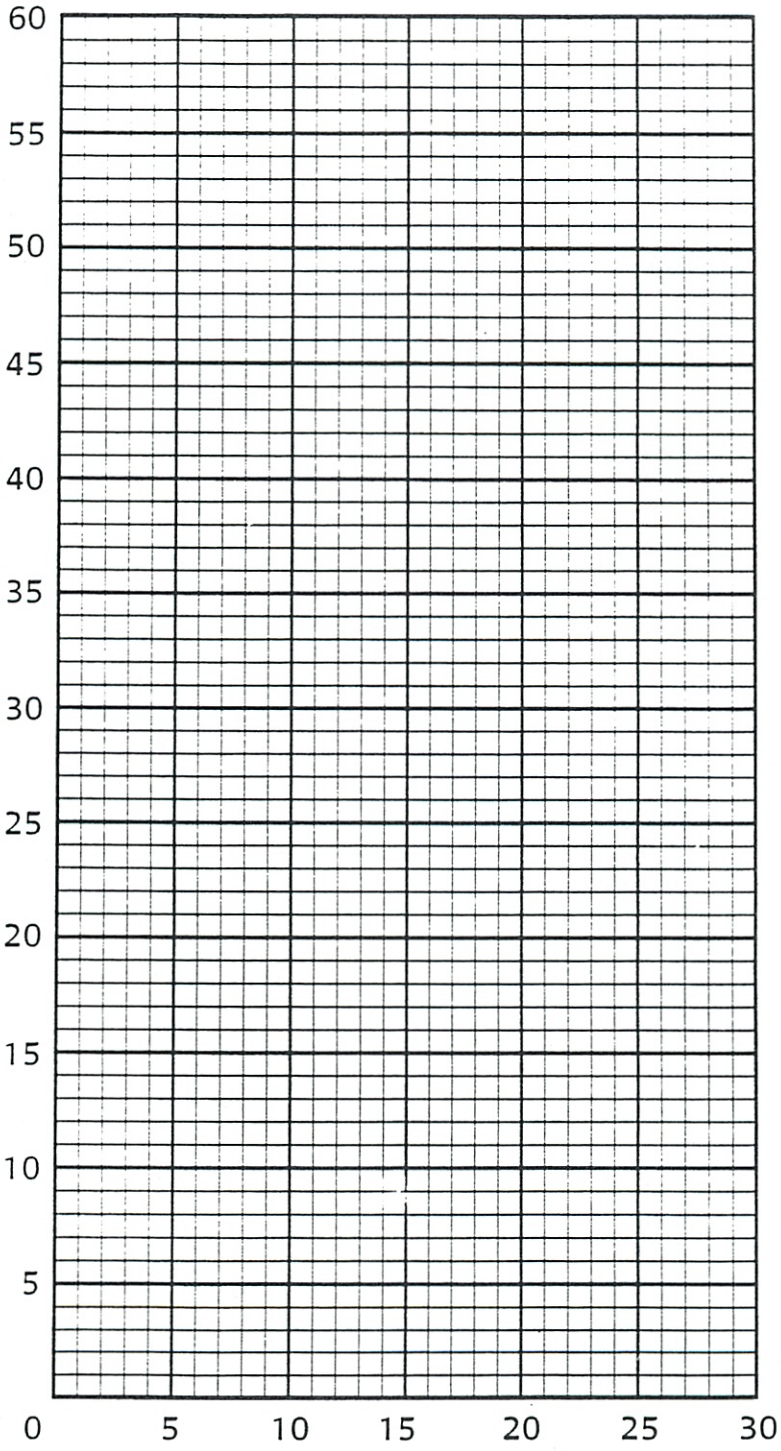
Name: _____



Review 2 --
Decision Making (A & B)

Name: _____

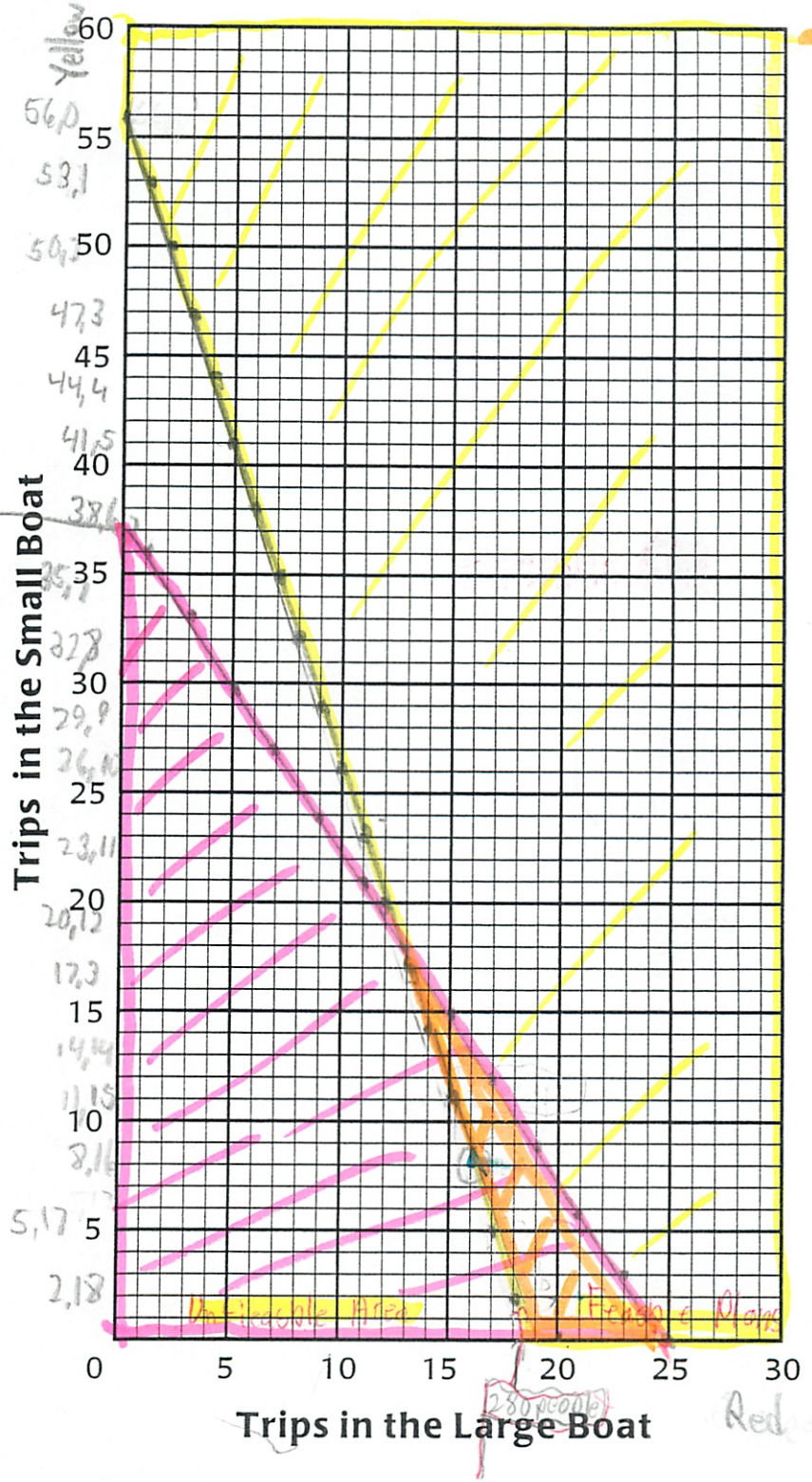
Second Graph



Student Activity Sheet 4

Name _____

Use with *Decision Making*, page 16.

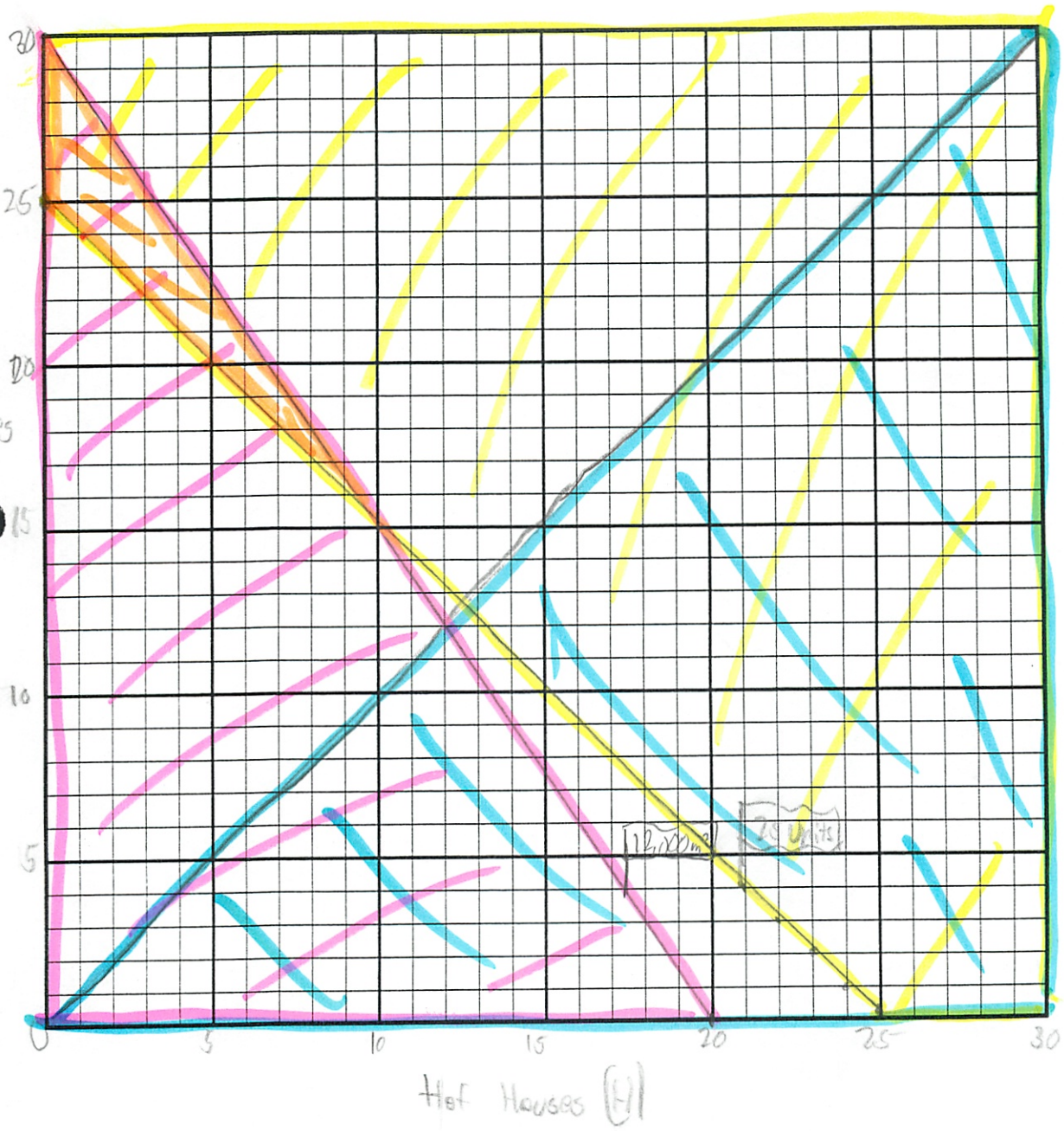


Student Activity Sheet 6

Name _____

Use with *Decision Making*, pages 21 and 26.

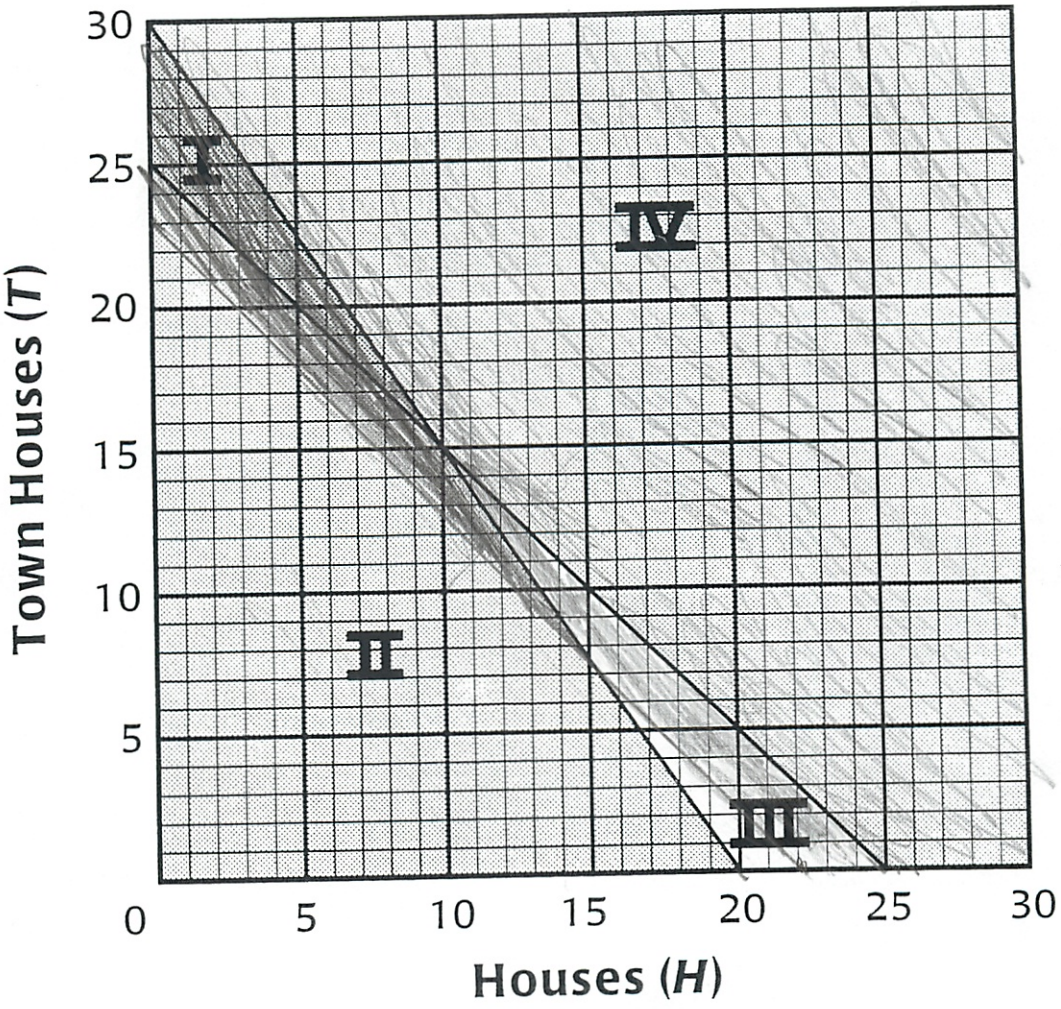
= Greater than 25 units constraint
= Area Constraint (12,000 m²)
= 1/2 House + more



Name_____

Student Activity Sheet 7

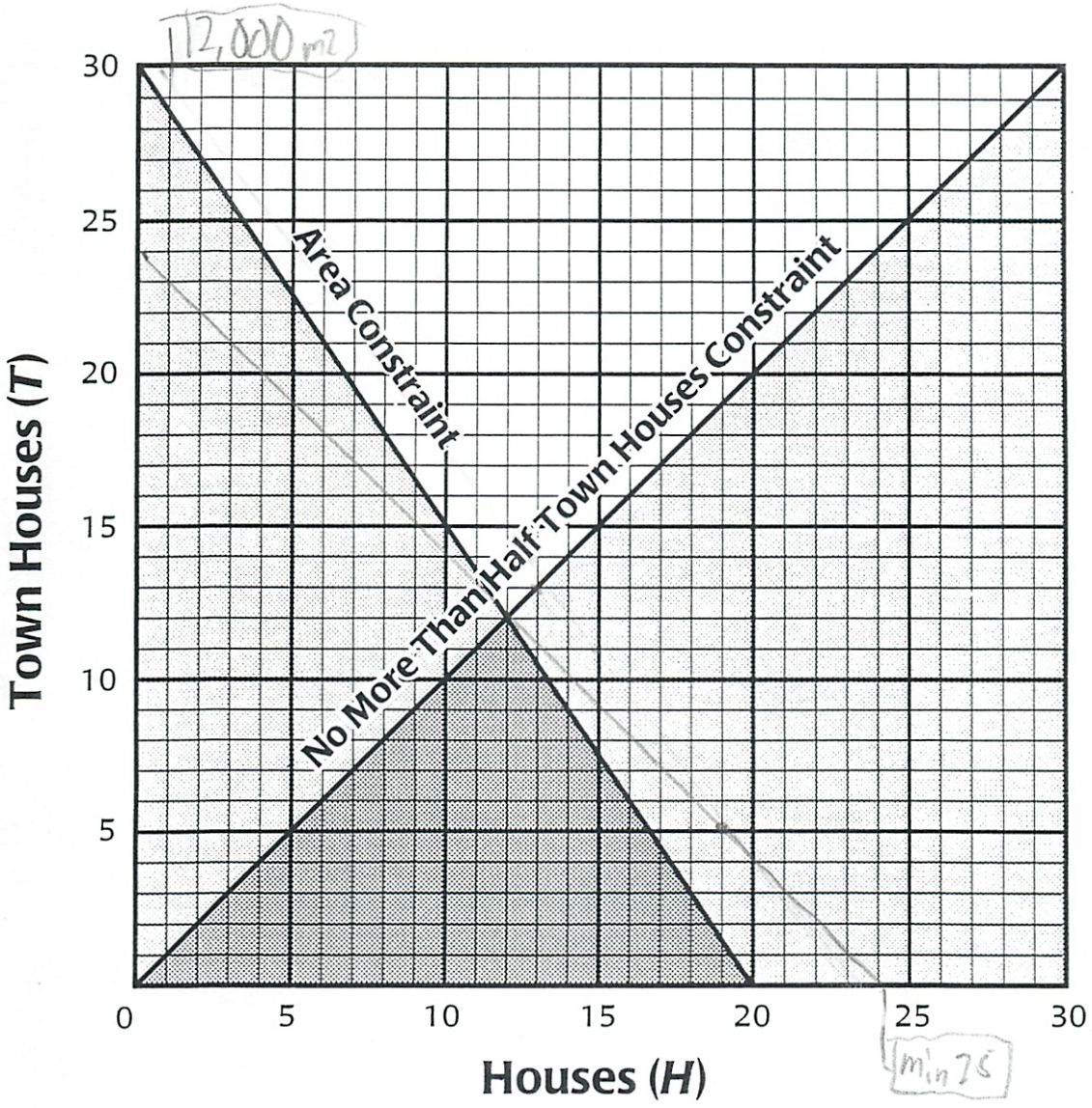
Use with *Decision Making*, page 22.



Student Activity Sheet 8

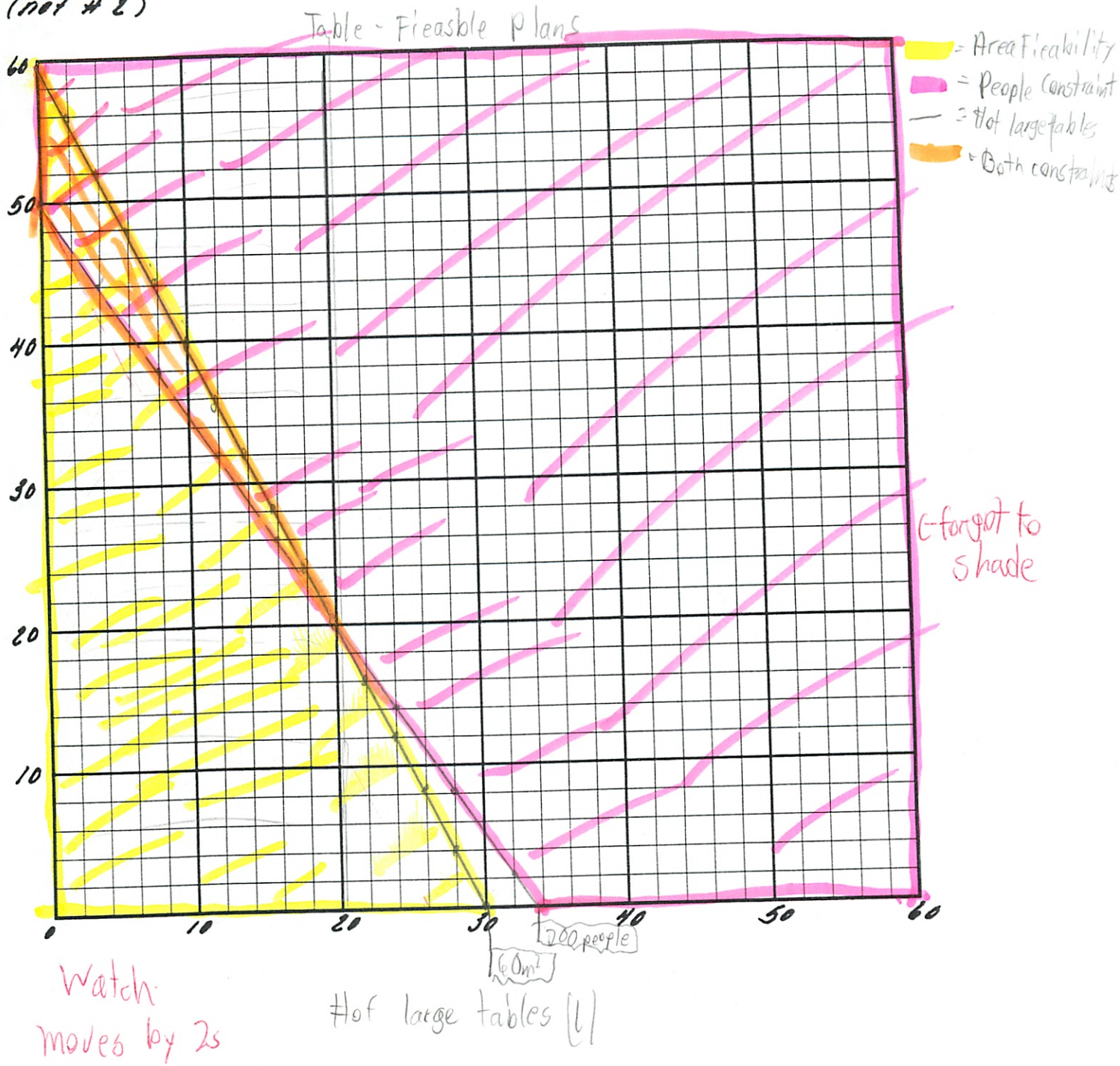
Name _____

Use with *Decision Making*, page 24.



Section A and Section J (not #2)

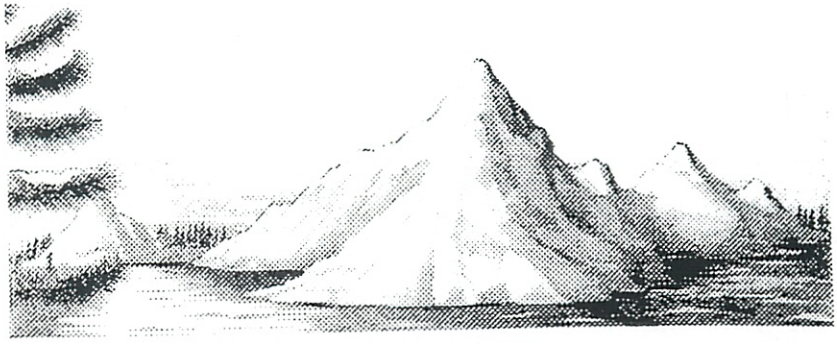
Pages 29 & 29



Name_____ Date_____

MT. SPARTA TRIP

Use additional paper as needed.



The seventh-grade class at Duvall Middle School is planning a field trip to the forest preserve at the top of Mt. Sparta. To get from the base of the mountain to the top, the 300 students must travel in either a van or a bus provided by the forest preserve. This expedition will take several trips, since only one vehicle can travel on the long, narrow road at one time. The van can carry 10 students and the bus can carry 30 students.

1. **a.** Find a feasible plan (V, B) that can be used to transport all of the students to the forest preserve using the two vehicles. Show how you came up with your plan.

   b. What is the fair exchange between the vans and buses? Explain how this works.

2. Use your answers to problems **1a** and **b** to graph all the possible feasible plans (V, B). Draw a dividing line for this constraint and shade in the feasible region on your graph. *Note:* Remember to label the horizontal and vertical axes and the dividing line on your graph.

The students would like to get to the forest preserve as quickly as possible, so that they can start having fun. Each round trip from the mountain base to the forest preserve takes 10 minutes by van and 15 minutes by bus. You have volunteered to find a plan that will get the students to the top of the mountain in less than four hours.

3. **a.** Find a feasible plan *(V, B)* that can be used to transport the students to the forest preserve in less than four hours.

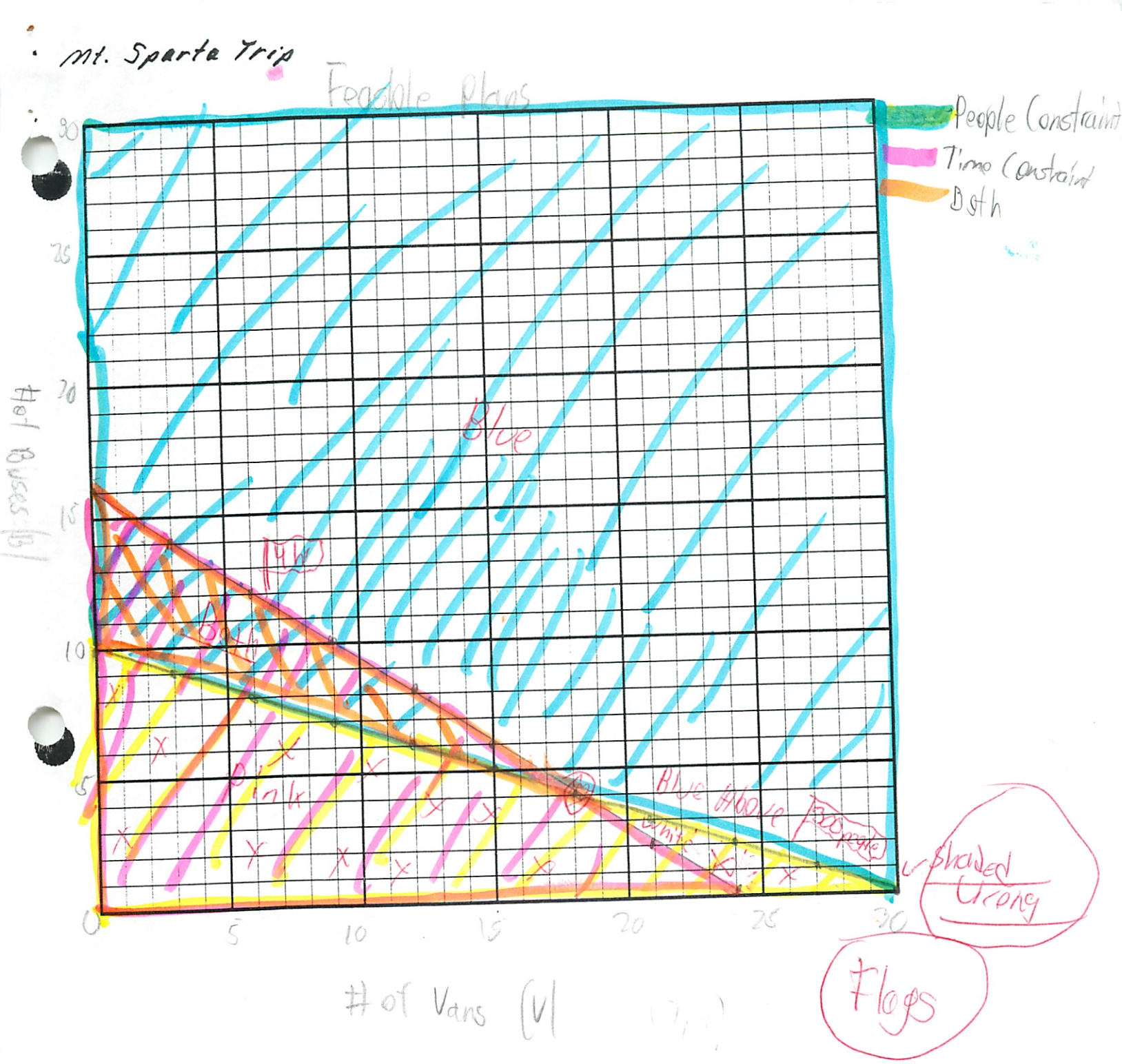
   b. What is the fair exchange here?

   c. Use your answers to problems **3a** and **b** to graph all the possible feasible plans *(V, B)* on the same graph that you made for problem **2.** Draw a dividing line for the constraint and shade in the feasible region on your graph.

4. Find a plan *(V, B)* that satisfies *both* constraints. Explain your answer.

5. Which plan would take the shortest time?

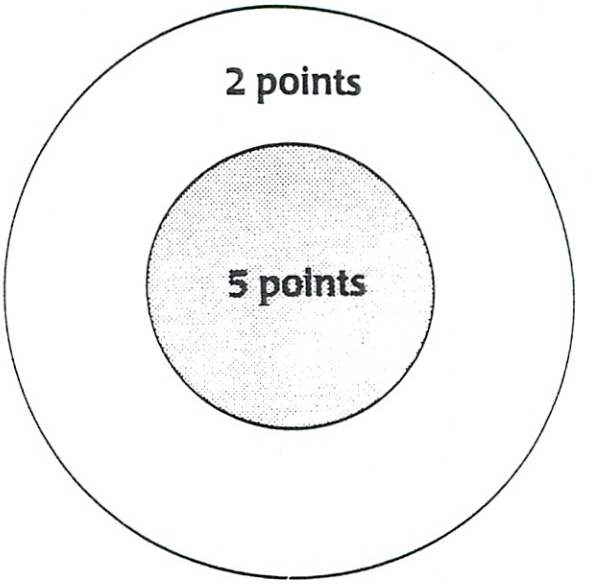
Mt. Sparta Trip



Name _____ Date _____

DARTS

Use additional paper as needed.



Tom and Minh are playing a dart game using the dart board shown on the right. A player scores 5 points when his or her dart lands in the center and 2 points when the dart lands in the outer rim.

1. Tom claims that he can score exactly 50 points by throwing the dart in the center six times and in the outer rim 12 times. Is he correct? Why or why not?

Minh scored 40 points in the first game.

2. Find two combinations of five-point and two-point shots *(F, T)* that would add up to 40 points.

3. What is the greatest number of times that Minh's darts could have landed in center during her first game in which she scored 40 points?

4. Make a graph using **Student Activity Sheet 9** to show as many feasible plans *(F, T)* for scoring 40 points as you can find.

5. What is the fair exchange between two-point shots and five-point shots to make a total score of 40 points?

In the dart game, the winner is the first person to score 40 or more points.

6. Shade your graph from problem **4** to show the feasible region of plans *(F, T)* that add up to 40 points.

Suppose you play a dart game in which you can only shoot the darts 15 or fewer times.

7. What is the maximum number of points you could earn?

8. How many points would you earn with the combination (2, 13) (two shots in the center and 13 shots in the outer rim)?

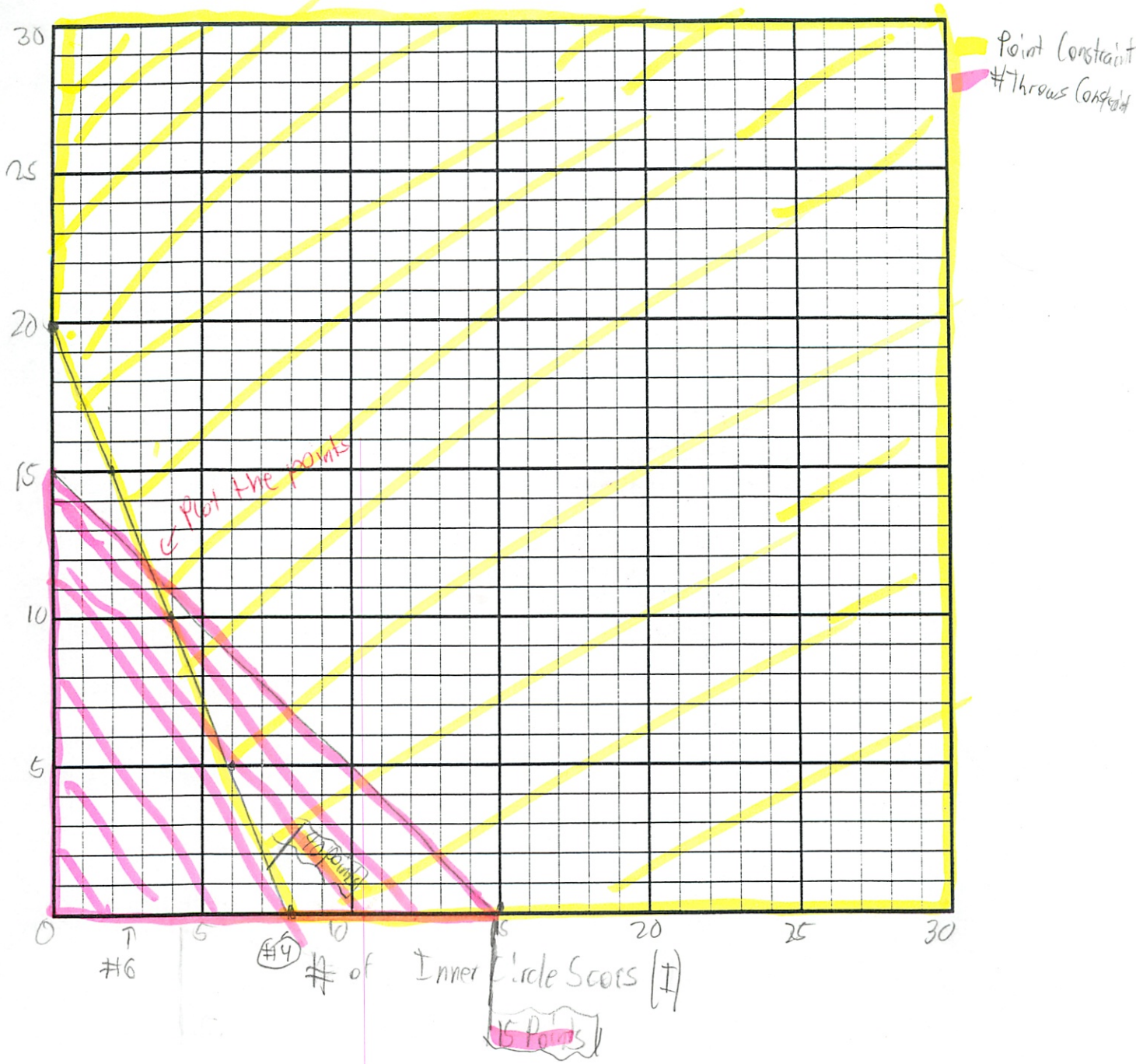
9. Is the combination (7, 3) a winning plan? Explain why or why not.

10. What is the least number of five-point shots you can make and still win?

11. Make a list of all the feasible plans that satisfy both constraints (scores of 40 points or more and 15 or less throws per game). Explain how you found your plans.

SARTs

Feasible Plans



Review -- Decision Making Name: Michael Plasmeier

Wow !!!! Mrs Evarts just inherited land in Morsetown. She and I decided to create a community where we could open a school and teach mathematics (a continuing dream of ours for many years). After much discussion, we decided to allot 18,000 square meters of the land for building houses and townhouses. We decided a house could use 600 square meters of land and townhouses could use 500 square meter of land. We need to find four feasible plans. Can you help us ?

Look for questions Show How (H, T) (10, 24) Area 600m², 1200 m² = 18000m² ✓

Oh no !!!!!! We were just told we needed to have a minimum number of residents (in order to have a good tax base). We must have at least 164 people living in the units. On an average, six people can live in each house, while four people can live in each townhouse.

We now need to find four feasible plans that fit both constraints. Can you help us again?

Show how

(H, T) (10, 24)

Area	600m²	1200m²	18000 m²	✓
People	60 people	96 people	156 people	✗
			=	✗

(H, T) (26, 2)

Area	15600m²,	1000m²	= 16600 m²	✓
People	156 people,	8 people	= 164 people	✓
			=	✓

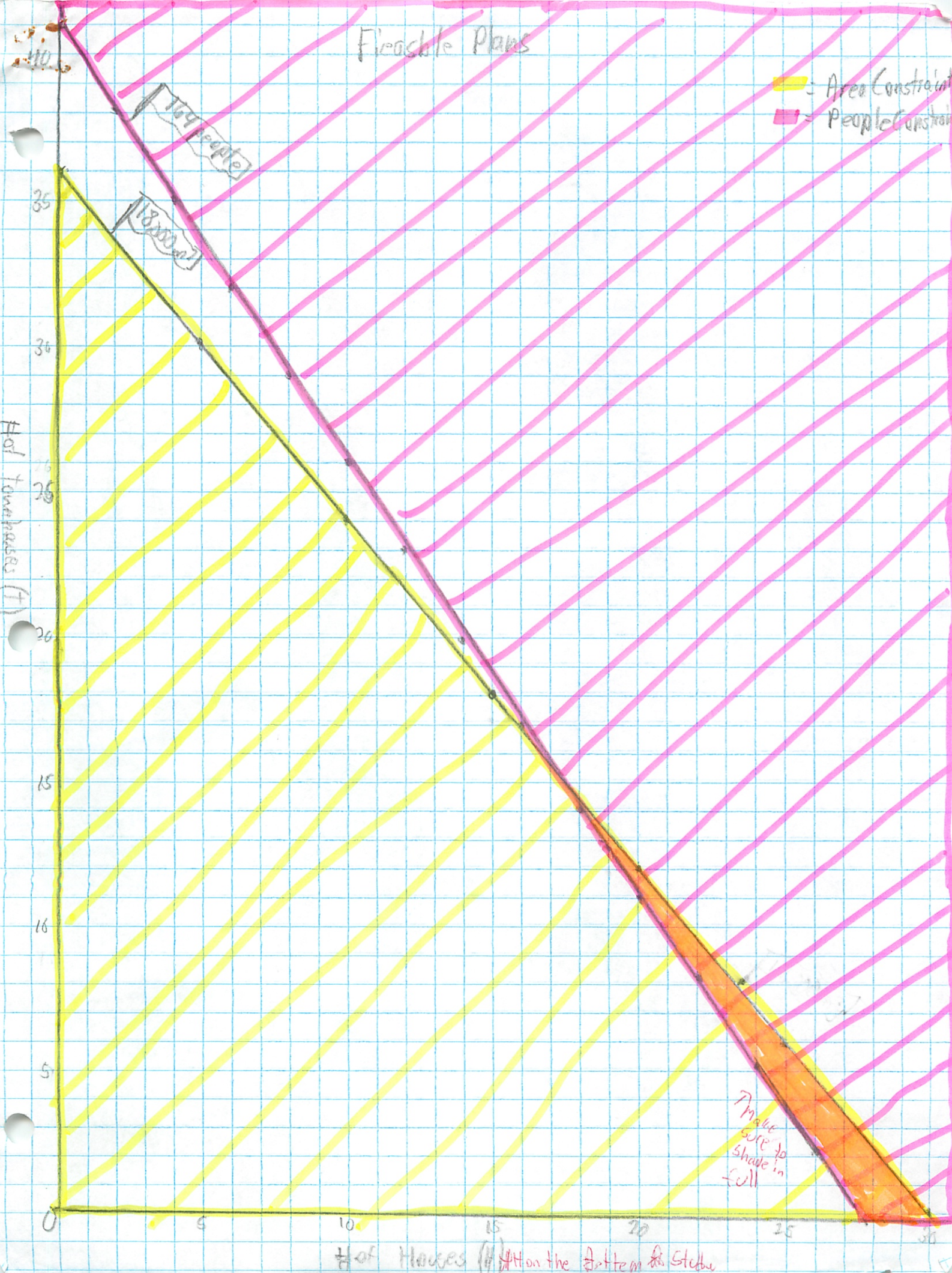
Hints:

1) Facts
2) Equation
3) Extremes
4) Fair Exchange / Slope / Direction Pair(s)
5) Ordered pairs for plans using the exact constraint.
6) Sketch / Graph showing #4 and shading the feasible plan region
   (do not forget to label your sketch / graph)

1 24 × 4 / 96

Thanks for your help :-)

Questions!


Feasible Plans
Area Constraint
People Constraint
$16,000
$8,000
40
35
30
25
20
15
10
5
0
5
10
15
20
25
30
# of Tonnages (T)
# of Hockeys (H)
Make sure to shade in full

Michael Plasmeier

H = # of Houses
T = # of Townhouses
(H, T)

House 600 m²
Townhouse 500 m²
Total 18000 m²

600H + 500T = 1800

If H = 0, then 500T = 1800
T = 36 (0, 36)

If T = 0, then 600H = 1800
H = 30 (30, 0)

Slope

House → 600 m² → ×5 → 3000 m²
Townhouse → 500 m² → ×6 → 3000 m²
5 Houses = 6 Townhouse

$\frac{I}{H}$ $\frac{-6}{5}$ or $\frac{6}{-5}$
(5, -6) or (-5, 6)

Plans
(-5, 6)
(30, 0)
(25, 6)
(20, 12)
(15, 18)
(10, 24)
(5, 30)
(0, 36)

House → 6 → ×2 → 12 people
Townhouse → 4 → ×3 → 12 people
2 Houses = 3 Townhouses

$\frac{I}{H}$ $\frac{-3}{2}$ or $\frac{3}{-2}$
(2, -3) or (-2, 3)

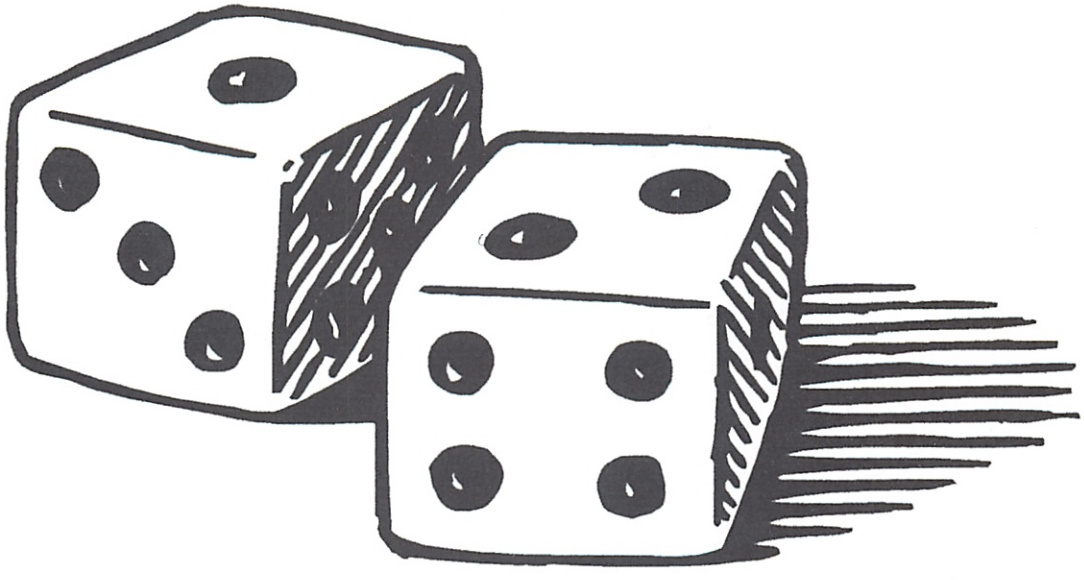
House 6 people
Town House 4 people
Total 164 people
6H + 4T = 164
If H = 0, then 4T = 164
T = 41 (0, 41)

If T = 0, then 6H = 164
$H = 27\frac{1}{3}$ $(27\frac{1}{3}, 0)$

Possible (0, 41)
(2, -3)
(2, 38)
(4, 35)
(6, 32)
(8, 29)
(10, 26)
(12, 23)
(14, 20)
(16, 17)
(18, 14)
(20, 11)
(22, 8)
(24, 5)
(26, 2)

Math

Probability



Michael Plasmeier

What do you Expect?

(Probability)

WHAT'S IN THE BUCKET?

DRAW	RED	YELLOW	BLUE
1		✓	
2	✓		
3		✓	
4	✓		
5	✓		
6	✓		
7		✓	
8	✓		
9	✓		
10		✓	
11			✓
12	✓		
13		✓	
14		✓	
15	✓		
16		✓	
17			✓
18	✓		

DRAW	RED	YELLOW	BLUE
19		✓	
20	✓		
21			✓
22		✓	
23		✓	
24		✓	
25	✓		
26		✓	
27	✓		
28		✓	
29	✓		
30	✓		
31	✓		
32	✓		
33		✓	
34	✓		
35		✓	
36	✓		
Total	18	15	3

Myne →

A. How many blocks drawn by your class were blue? How many were yellow? How many were red?

3 - Blue
15 - Yellow
18 - Red

B. Which color block—blue, yellow, or red—do you think there are the greatest number of in the bucket? Which color block do you think there are the least number of?

Red or Yellow Greatest
Blue Least

C. Based on your experimental data, predict the fraction of blocks in the bucket that are blue, that are yellow, and that are red.

Y $\frac{15}{36} \rightarrow \frac{5}{12}$ | R $\frac{18}{36} \rightarrow \frac{6}{12} \rightarrow \frac{1}{2}$ | B $\frac{3}{36} \rightarrow \frac{1}{12}$

D. After your teacher shows you the blocks in the bucket, find the fraction of blue blocks, the fraction of yellow blocks, and the fraction of red blocks.

B $\frac{4}{24} \rightarrow \frac{1}{6}$ (# of blues / # of total)

Y $\frac{8}{24} \rightarrow \frac{4}{12} \rightarrow \frac{1}{3}$

R $\frac{12}{24} \rightarrow \frac{1}{2}$

Theoretical Probility - use facts

Expermental Probility - w/ experment (no facts)

E. How do the fractions of blocks that are blue, yellow, and red compare to the fractions of blue, yellow, and red blocks drawn during the experiment?

Exp

B	Y	R
$\frac{1}{12}$	$\frac{5}{12}$	$\frac{1}{2}$

all add to 1

Act

B	Y	R
$\frac{1}{6}$	$\frac{1}{3}$	$\frac{1}{2}$

all add to 1

Problem 1.1 Follow-Up

1. a. Is each block *equally likely* to be selected from the bucket? That is, does each block have the same chance of being selected? Explain your reasoning.

Yes, each block has a $\frac{1}{24}$ chance, There is an equal # of each, Only 1 type. All the same.

b. Is each color equally likely to be selected? Explain your reasoning.

No, there is not an equal amount of colors

2. What is the probability of drawing a white block from the bucket?

$\frac{0}{24}$ - there are no white blocks

0 means never happens, not possible

3. How many blue blocks need to be added to the bucket for the probability of drawing a blue block to be $\frac{1}{2}$?

Add 16 $\frac{20}{40} = \frac{1}{2}$

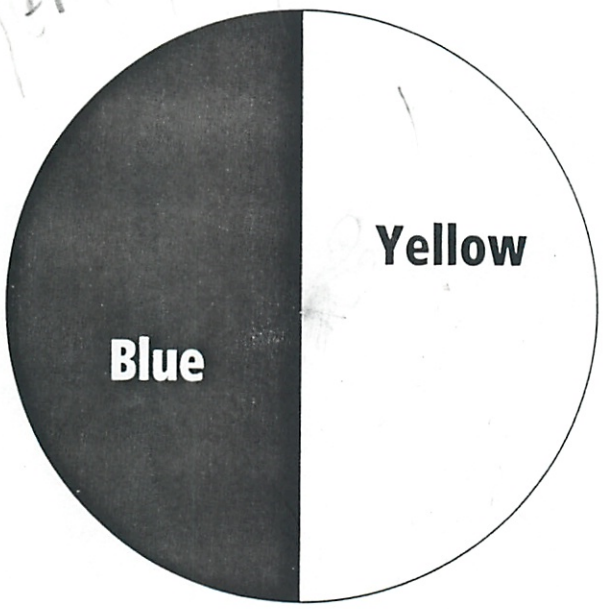
Find # of others, that will be $\frac{1}{2}$ of total

Labsheet 1.2

Match/No-Match

Prob of match = # of matches / # of turns → 12/24 → 1/2 → .5 → 50%

- Player A matches = 1 pt
- Player B no match = 2 pts



B → Y N
B → B M
Y → Y M
Y → B N

2 M
2 N = prob.

Turn number	Result	Player A's score	Player B's score
1	B B	1	
2	B B	2	
3	B Y		2
4	Y Y	3	
5	Y Y	4	
6	B B	5	
7	Y B		4
8	Y Y	6	
9	Y B		6
10	B Y		8
11	B Y		10
12	B Y		12

Turn number	Result	Player A's score	Player B's score
13	Y Y	7	
14	B Y		14
15	Y Y	8	
16	B B	9	
17	B B	10	
18	Y B		16
19	B Y		18
20	Y Y	11	
21	B Y		20
22	B B	12	
23	Y B		22
24	Y B		24

12 - 24

Matching Colors

April and Tioko invented a two-player spinner game called Match No-Match. A player spins this spinner twice on his or her turn. If both spins land on the same color (a match), Player A scores. If the two spins land on different colors (a no-match), Player B scores. Since there are two matching combinations—blue blue and yellow yellow—they decided that Player A should score only 1 point for a match and Player B should score 2 points for a no-match.

All Groups
III 13
6
II 10
IIII 12
14
11
16
9
15

24 turns
× 15 groups
360 total turns

Exp

# of m / # of total (turns) 128/360 → 89/180 → .494 → 49%

Play the Match/No-Match game with a partner. Take a total of 24 turns (12 turns for each player). For each turn, record the color pair on Labsheet 1.2, and award points to the appropriate player.

A. Use the results you collected to find the *experimental probabilities* of a match and a no-match. The experimental probability of a match is

$$P(\text{match}) = \frac{\text{number of turns that are matches}}{\text{total number of turns}}$$ 12/24 → 1/2 → .5 → 50%

The experimental probability of a no-match is

$$P(\text{no-match}) = \frac{\text{number of turns that are no-matches}}{\text{total number of turns}}$$ 12/24 → 1/2 → .5 → 50%

B. List all the possible **outcomes** of a turn (two spins). Write the outcomes as pairs of the form *color on first spin / color on second spin*, such as blue/blue. Use your list to determine the *theoretical probabilities* of a match and a no-match. Since all the outcomes are equally likely, the theoretical probability of a match is

B/B
B/Y
Y/B
Y/Y

$$P(\text{match}) = \frac{\text{number of outcomes that are matches}}{\text{number of possible outcomes}}$$ 2/4 → 1/2 → .5 → 50%

← Probability

1st S 2nd S Out
Start
B — B B
Y — B Y
B — Y Y B
Y — Y Y Y

The theoretical probability of a no-match is

$$P(\text{no-match}) = \frac{\text{number of outcomes that are no-matches}}{\text{number of possible outcomes}}$$ 2/4 → 1/2 → .5 → 50%

C. How do your results for parts A and B compare?

The same for us, almost for group (1% off)

D. Is Match/No-Match a **fair game**? If you think the game is fair, explain why. If you think it is not fair, explain how the rules could be changed to make it fair.

No, you should only give 1 pt for a no match because it has an equal chance of happing.

Problem 1.2 Follow-Up

1. Are a match and a no-match equally likely? Explain your reasoning.

Yes they have the same probability of happing a 1:2 chance

2. In 100 turns of the Match-No-Match game, how many times would you expect each of the following to occur?
   a. two yellows 25 x → Has a $\frac{1}{4}$ chance $\frac{1}{4}$ of 100 = 25 turns
   b. two blues 25 x → " " " → " " " " (Y becomes B)
   c. one yellow and one blue 50 x → " " $\frac{2}{4}$ " → $\frac{2}{4}$ of 100 = 50 turns Either or
   d. at least one yellow 75 x → " " $\frac{3}{4}$ " → $\frac{3}{4}$ " = 75 turns

Use words to pair

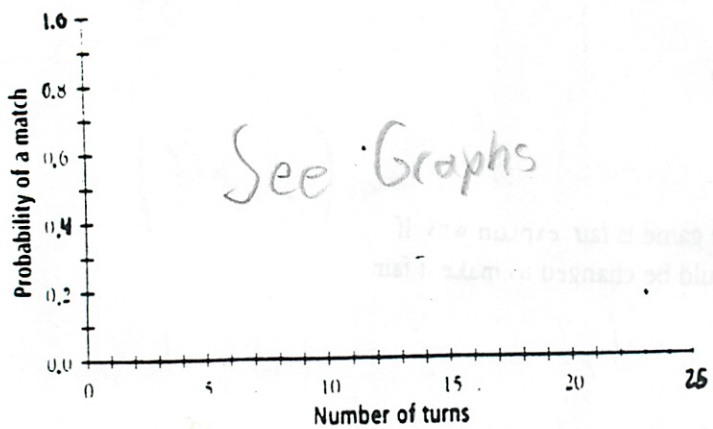
Need to write $P(2\text{ yellows}) = \frac{\#\text{ of 2 yellows}}{\#\text{ of outcomes}} = \frac{1}{4}$

$\frac{1}{4}$ of 100 turns = 25 turns

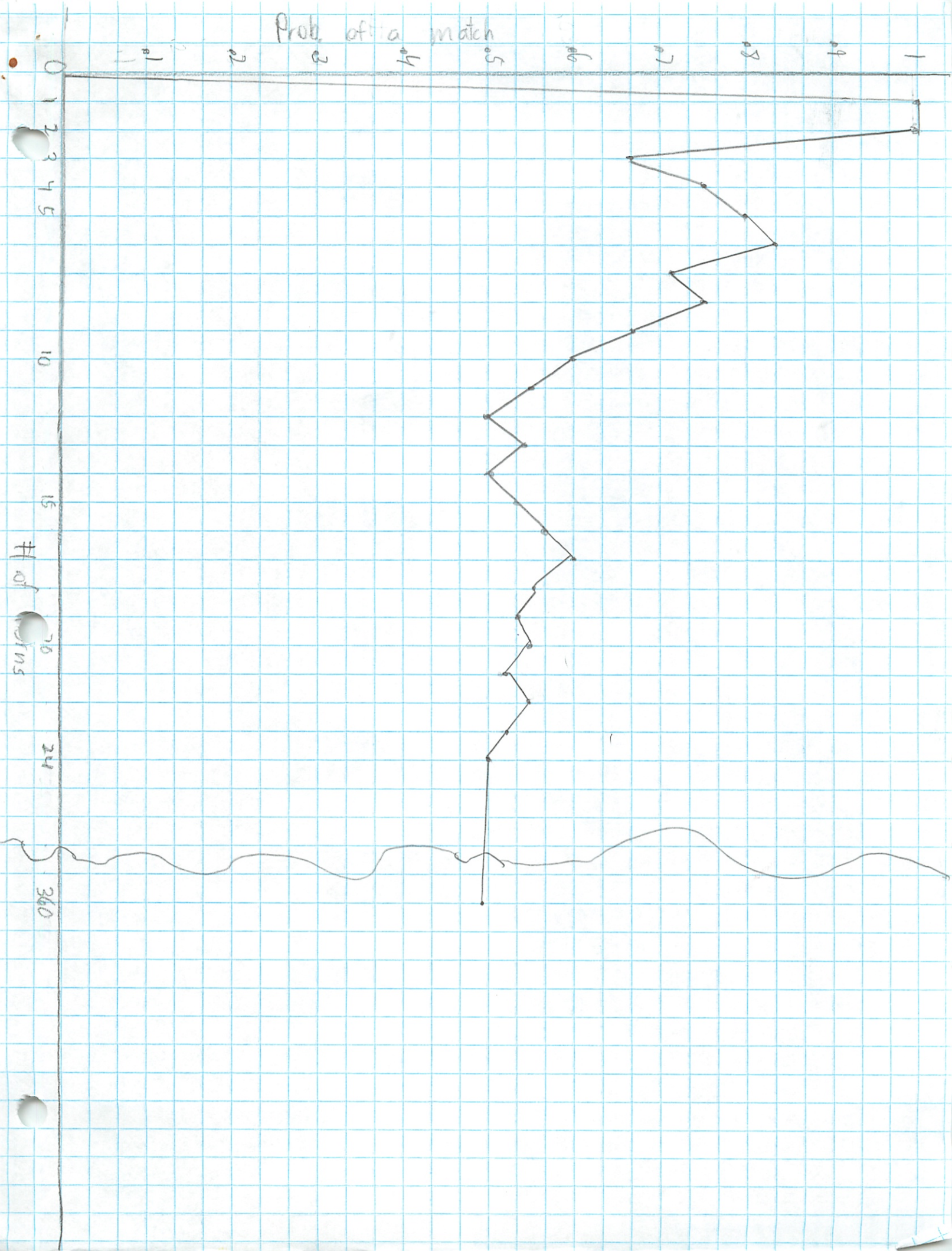
3. a. Look at your results on Labsheet 1.2. If you had stopped after one turn, what would have been the experimental probability of a match? If you had stopped after two turns, what would have been the experimental probability of a match? If you had stopped after three turns, what would have been the experimental probability of a match? Continue to find the experimental probabilities through 24 turns. Record your results in a table.

1	$\frac{1}{1}=1$	5	$\frac{4}{5}=.8$	9	$\frac{6}{9}=.66$	13	$\frac{7}{13}=.54$	17	$\frac{10}{17}=.59$	21	$\frac{11}{21}=.52$
2	$\frac{2}{2}=1$	6	$\frac{5}{6}=.83$	10	$\frac{6}{10}=.6$	14	$\frac{7}{14}=.5$	18	$\frac{10}{18}=.55$	22	$\frac{12}{22}=.55$
3	$\frac{2}{3}=.66$	7	$\frac{5}{7}=.71$	11	$\frac{6}{11}=.55$	15	$\frac{8}{15}=.53$	19	$\frac{10}{19}=.53$	23	$\frac{12}{23}=.52$
4	$\frac{3}{4}=.75$	8	$\frac{6}{8}=.75$	12	$\frac{6}{12}=.5$	16	$\frac{9}{16}=.56$	20	$\frac{11}{20}=.55$	24	$\frac{12}{24}=.5$

b. Plot your data from part a on a coordinate grid.

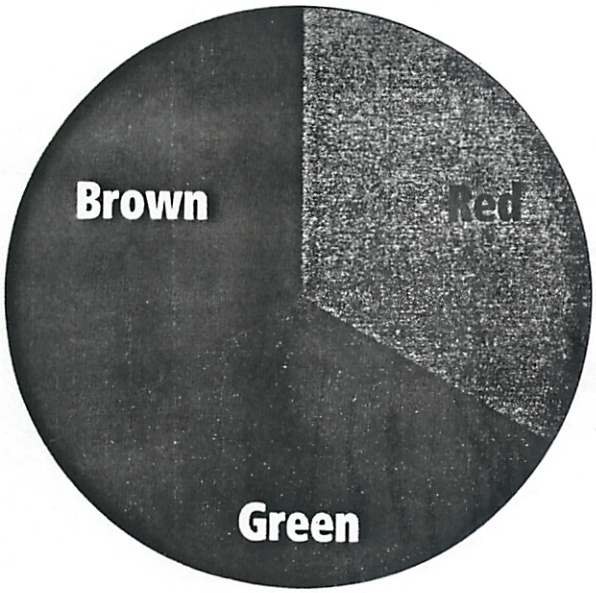


See Graphs

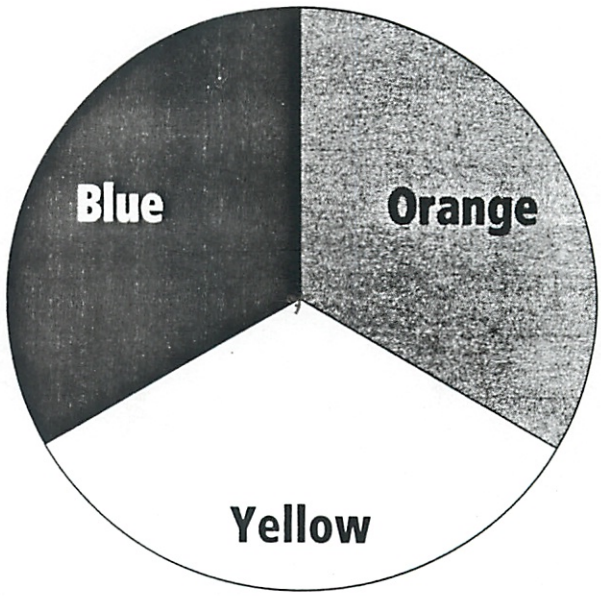

Prob. of a match
0
.1
.2
.3
.4
.5
.6
.7
.8
.9
1
0
1
2
3
4
5
10
15
20
25
30
# of runs

Making Purple

Spinner A



Spinner B



Turn number	Purple?
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	

Turn number	Purple?
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	✓
25	
26	

Turn number	Purple?
27	✓
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	

Turn number	Purple?
40	
41	
42	✓
43	✓
44	
45	
46	✓
47	
48	
49	
50	
Total	5

1.3 Making Purple

The most popular game at the school carnival is a spinner game called Making Purple. To play the game, a player spins each of the spinners below once. If the player gets red on spinner A and blue on spinner B, the player wins, because red and blue together make purple.

Group
11/3
11/6
11/8
10
11/4
11/7
11

15 x 50 turns
750 total turns

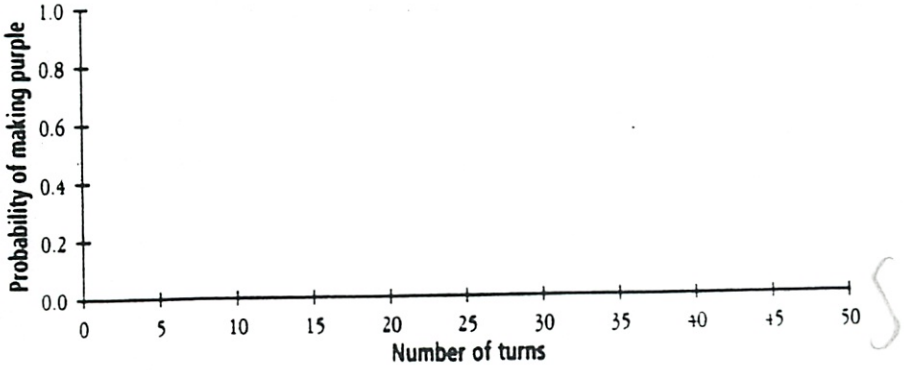
A. Play Making Purple 50 times, and record the results on Labsheet 1.3. Based on your results, what is the experimental probability that a player will "make purple" on any single turn?

# of purples → 5/50 → 1/10 → .1 → 10%

Ours P(purple) # of spins turns (2 x spins per turn)

Group # of purple / # of turns → 98/750 → .13 → 13%

B. Plot the experimental probability of making purple you would have found if you had stopped after 5 turns, 10 turns, 15 turns, and so on, up to 50 turns.



C. What do you think your graph would look like if you had taken 100 turns? 200 turns? 1000 turns? It would go on and get more evened out to .11

D. List the possible outcomes for a turn. Write the outcomes as pairs of the form *color on spinner A/color on spinner B*. Are the outcomes equally likely? Explain why or why not.

4 out

Spin	B	G	R
B	B/B	B/G	B/R
G	G/B	G/G	G/R
R	R/B	R/G	R/R
	B/B	B/G	B/R
	G/B	G/G	G/R
	R/B	R/G	R/R
	B/Y	G/Y	R/Y

1/9 chance

Give key
R = Red
so on

P(purple)
# purple / # outcomes → 1/9 → 0.11 → 11%

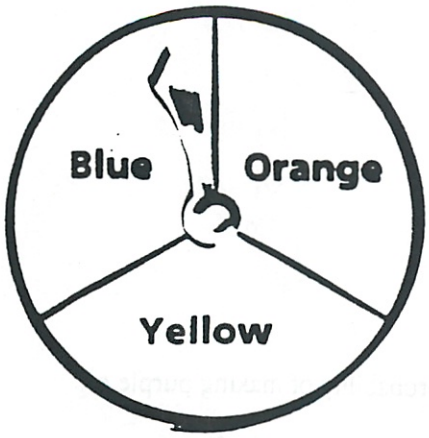
E. What is the theoretical probability that a player will make purple on a turn?

0.11 → 1/9 → 11%

F. How does the experimental probability of making purple compare with the theoretical probability of making purple? Explain.

It is close

April and Tioko decide to play the Match/No-Match game on the spinner below. As in the original game, a turn consists of two spins. Player A scores 1 point if the spins match, and Player B scores 1 point if they do not match.



A. Use a counting tree to find all the possible outcomes for this game.

B. What is the theoretical probability of getting a match on a turn?

C. What is the theoretical probability of getting a no-match on a turn?

D. Do you think this is a fair game? If you think the game is fair, explain why. If you think it is not fair, explain how the rules could be changed to make it fair.

Problem 1.4 Follow-Up (1.4)

1. a. Find all the possible outcomes for the Making Purple game in Problem 1.3 by creating a counting tree.

B/B
B/O
B/Y
G/B
G/O
G/Y
R/B
R/O
R/Y

R = Red
G = Green
B = Blue
Y = Yellow
O = Orange
Br = Brown

See Tree Before

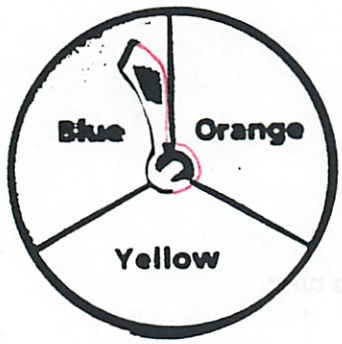
Didn't Need

b. Use your counting tree to find the theoretical probability of making purple on a turn. $\frac{1}{9}$ or $P(\text{purple}) \frac{\#\text{ of purple}}{\#\text{ of outcomes}} \frac{1}{9} \rightarrow 0.11 \rightarrow 11\%$

c. How does the theoretical probability you found by using a counting tree compare with the theoretical probability you found in Problem 1.3?

It was the same because I used a counting tree there. I just copied the answer. Get rid of this problem

2. Shondra played a game with a spinner and a coin. For each turn, she spun the spinner once and tossed the coin once. For example, one possible outcome would be blue, head.

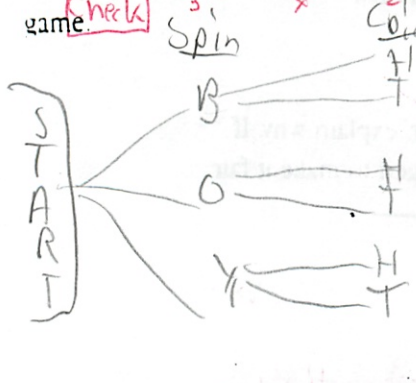


Need + box

Key
B = Blue
Y = Yellow
O = Orange
H = Head
T = Tail

Need

a. Create a counting tree to find all the possible outcomes of a turn in Shondra's game. Check



3. What is the probability that Shondra will spin blue and toss a head on a turn?

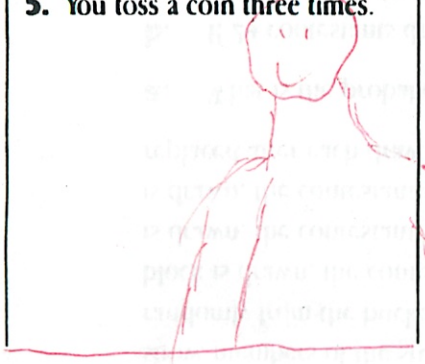
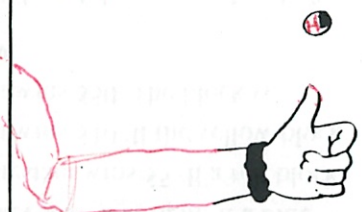
$\frac{1}{6}$ or $P(BH) \frac{\#\text{ of BH}}{\#\text{ of outcomes}} \frac{1}{6}$ or ~~0.11~~ ~~11%~~

What was I thinking?

Applications

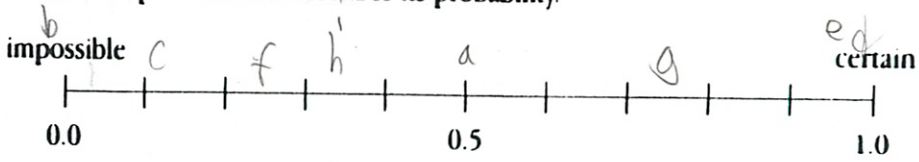
See Notebook

In 1–5, decide whether the possible resulting events are equally likely, and briefly explain your answer.

Action	Possible resulting events
1. You roll a number cube. If its a 6-sider it is eaual lickly, 3 odds (1,3,5) or 3 even (2,4,6)	You roll an even number, or you roll an odd number. 
2. A baby is born. Not eaual lickly	The baby is left-handed, or the baby is right-handed.
3. You toss a marshmallow.	The marshmallow lands on its end, or the marshmallow lands on its side. 
4. You draw a card from a standard deck of 52 playing cards with no jokers.	The card is a heart, the card is a club, the card is a diamond, or the card is a spade.
5. You toss a coin three times. 	You get three heads, you get two heads and a tail, you get a head and two tails, or you get three tails. 

6. The probability of an event is a number between 0 and 1. The greater the probability, the greater the chances the event will happen. If an event is impossible, the probability that it will occur is 0, or 0%. If an event is certain to happen, the probability that it will occur is 1, or 100%.

Copy the number line below. Place the letter of each event below on the number line at the spot that best describes its probability.



a. You will get a head when you toss a coin.

b. You can run 20 miles in one hour.

c. You will roll a 6 on a number cube.

See Notebook

d. It will snow in Minnesota this winter.

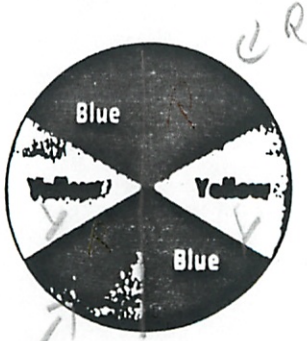
e. The sun will rise tomorrow.

f. You will toss a coin twice and get two heads.

g. You will toss a coin twice and get at least one head.

h. You will listen to a CD today.

i. You will spin the spinner shown below once, and it will land on red.



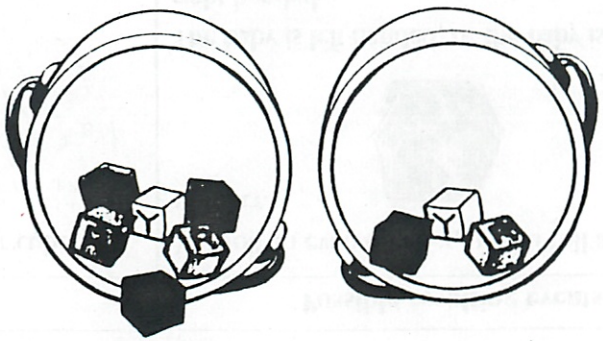
6 eaual

7. In the Gee Whiz Everyone Wins! television game show, members of the studio audience draw a block randomly from the bucket shown at right. If a blue block is drawn, the contestant wins $5. If a red block is drawn, the contestant wins $10. If the yellow block is drawn, the contestant wins $50. The block is replaced after each draw.

a. What is the probability of drawing each color?

b. If 24 contestants draw a block from the bucket, how much money can the game show expect to pay out?

8. All the winners from the Gee Whiz Everyone Wins! game show get an opportunity to compete for a bonus prize. Each contestant draws one block at random from each of the buckets shown below. If the blocks are the same color, the contestant wins a prize.

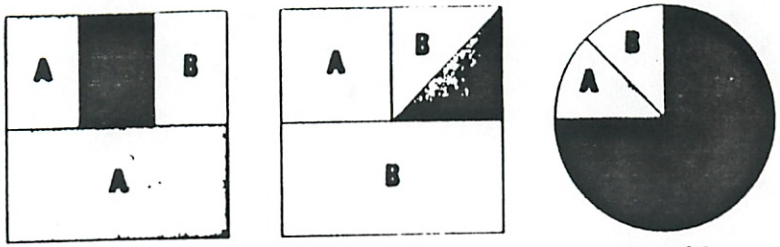


Bucket 1 Bucket 2

a. List all the possible outcomes when a player randomly draws one block from each bucket.

b. What is the probability that a contestant will draw two blocks of the same color?

9. A dart is thrown at random at each of the dartboards below.



Board 1 Board 2 Board 3

a. For each dartboard, what is the probability that a dart will land in a region marked A? A region marked B? A region marked C?

b. For board 1, what is the probability that a dart will land in a region marked A or B?

c. For board 2, what is the probability that a dart will *not* land in region C?

10. Lori's little sister Lulu tore the labels from ten cans of vegetables. Now all of the cans look exactly the same. Lori knows that three of the cans contain corn, two contain spinach, four contain beans, and one contains tomatoes. Lori picks a can at random and opens it.

a. What is the probability that the can contains corn?

b. What is the probability that the can contains beans?

c. What is the probability that the can does *not* contain spinach?

d. What is the probability that the can contains beans or tomatoes?

e. Is it equally likely that any one of the vegetables is in the can? Explain.

11. José is going to a party. He has decided to wear his jeans and a sweater, but he can't decide what else to wear. The counting tree below shows the possible ou he can make if he randomly selects sneakers or loafers; blue, red, or brown soc and a black, red, or plaid cap.

a. What are the chances that José will wear loafers, blue socks, and a plaid ca

b. What are the chances that José will wear sneakers, either red or blue socks and a black cap?

c. What are the chances that José will wear neither red socks nor a red cap?