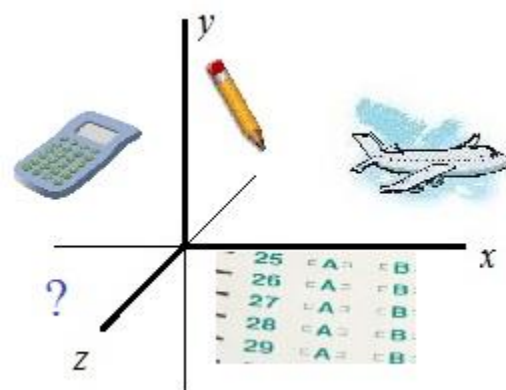# SAT Practice Test 1

30 multiple choice math questions (and solutions)
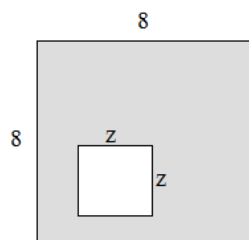
Topics include area, exponents, sequences, inequalities, probability, square roots, word problems, and more.

1) If $2x + 7 = 13$, what is $4x - 7$?

    a) 3

    b) 5

    c) 7

    d) −3

    e) −5

2) The mean of x and y is 9. And, the mean of x, y, and z is 11. What is z?

    a) 9

    b) 10

    c) 11

    d) 13

    e) 15

3) What is the area of the shaded region?

(The figure is a square inside a square)

    a) $16 + 2z$

    b) $32 - 4z$

    c) $64 + z^2$

    d) $64 - z^2$

    e) $32 - z^2$

4) Team "hoops" scored 1/4 of their points in the 1st quarter; 1/3 of their points in the 2nd quarter; 1/5 of their points in the 3rd quarter.
If they finished with 60 points, how many did they score in the 4th quarter?

    a) 12

    b) 13

    c) 14

    d) 15

    e) 16

5) $2^{2x + 1} = 8^{x - 1}$ Find x:

    a) −1

    b) 2

    c) 4

    d) 1/2

    e) 2/3
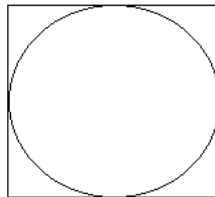
6) If 4 less than twice a number is ten, what is the number?

 a) 4

 b) 7

 c) 18

 d) 24

 e) 30

7) The following is a circle inscribed in a square. If the perimeter of the square is 16, what is the area of the circle?

 a) 4π

 b) 8π

 c) 16π

 d) 24π

 e) 32π

8) What is $f(g(2))$?

 a) -1

 b) 0

 c) 2

 d) 3

 e) 5

x	f(x)
-1	-2
0	1
1	2
2	3
3	5

x	g(x)
-1	-3
0	-1
1	0
2	1
3	3

9) For the following sequence, $T_1 = 5$ $T_n = T_{n-1} + 3$

What is T_9 ?

 a) 27

 b) 29

 c) 32

 d) 33

 e) 35

10) What is the slope of a line parallel to $4x + 3y = 12$?
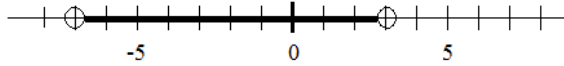
 a) 4

 b) −4

 c) 3/4

 d) −3/4

 e) −4/3

11) $m + 3(n - 1) = p$ $n - 1 = ?$

   a) $\dfrac{m + p}{3}$

   b) $\dfrac{m - p}{3}$

   c) $\dfrac{p - m}{3}$

   d) $\dfrac{3m}{p}$

   e) $\dfrac{3p}{m}$

12) Which of the following is

   a) $|x + 2| \geq 5$

   b) $|x + 2| > 5$

   c) $|x + 2| < 5$
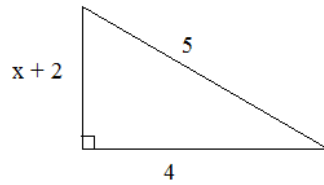
   d) $|x + 2| \leq 5$

   e) none of the above

13)

   $x + \dfrac{3}{x} = 5 + \dfrac{3}{5}$ Find x:

   a) 3/5

   b) 5/3

   c) 5

   d) 15

   e) 1/5

14) Find x:

   a) 0

   b) 1

   c) 3

   d) $\sqrt{2}$

   e) 9

15) If you roll a 6-sided die twice, what is the probability that the first roll is greater than the second?

   a) 1/3

   b) 15/36

   c) 1/2

   d) 21/36

   e)   1

16) Estimate $P \cdot R$

    a) A

    b) B

    c) C

    d) D

    e) E

17) $3x - 2y = 21$

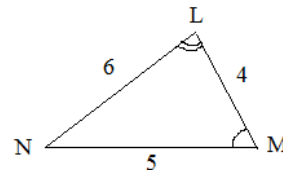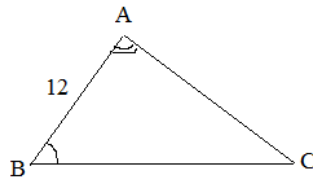   If $y = x - 1$, what is x?

    a) 11

    b) 16

    c) 19

    d) 23

    e) 24

18) $\sqrt{3} \times \sqrt{6} =$

    a) $3\sqrt{2}$

    b) $3\sqrt{3}$

    c) 3

    d) $2\sqrt{3}$

    e) $3\sqrt{6}$

19) Find the perimeter of $\triangle ABC$

    a) 2

    b) 15

    c) 30

    d) 35

    e) 45

20) The sum of 4 consecutive even integers is 900. What is the value of the smallest integer?

    a) 220

    b) 222

    c) 225

    d) 228

    e) 230

21) At the ice cream shop, there are 5 flavors and 3 toppings. If a child may order only 1
   flavor with 1 topping, how many choices does he have?

   a) 3
   b) 5
   c) 8
   d) 15
   e) 20

22) In the morning, you drove 45 mph to the beach. In the afternoon, you drove 30mph back home.
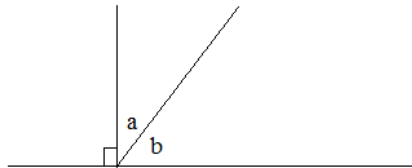   If the total time in the car was 1 hour, how far do you live from the beach?

   a) 15 miles
   b) 18 miles
   c) 21 miles
   d) 25 miles
   e) 37 miles

23) $\dfrac{x}{y} = \dfrac{3}{4}$ What is $\dfrac{4x}{3y}$?

   a) x
   b) y
   c) 4/3
   d) 1
   e) 12

24) The ratio of a to b is 2:3.   Find $\angle a$

   a) 30
   b) 32
   c) 36
   d) 40
   e) 45

25) $x^2 + y^2 = 111$ $xy = 44$

   Find $(x + y)^2$

   a) 111
   b) 155
   c) 178
   d) 199
   e) 310

26) What is 20% of .4 ?

  a) .08
  b) .8
  c) 2
  d) 8
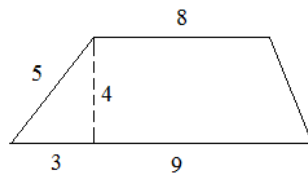 e) 16

27) $2x < y < 0$ Which is the largest value?

  a) x
  b) $-2y$
  c) 2x
  d) 2y
  e) $-y$

28) $8^{2/3} + 9^{1/2} =$

  a) 6
  b) 7
  c) 10.5
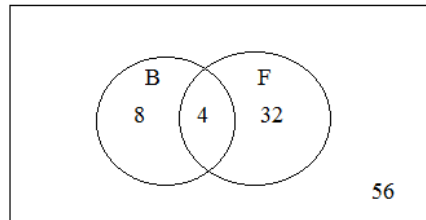 d) 12
  e) 14

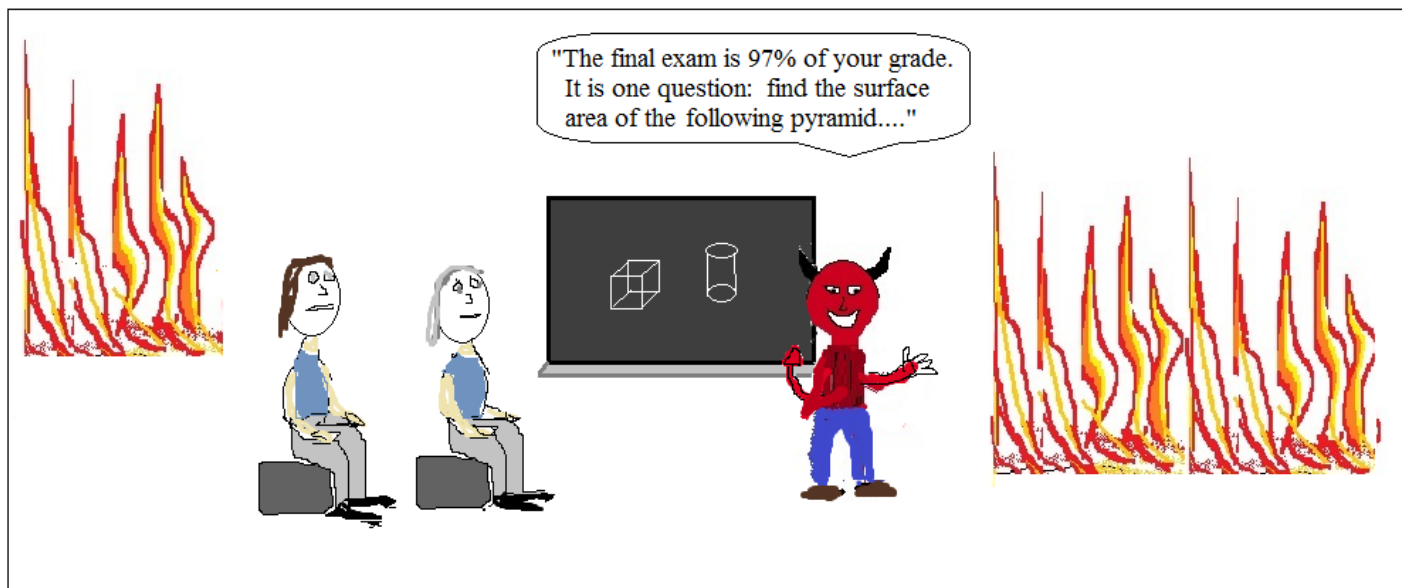29) Find the area of the trapezoid.

  a) 36
  b) 40
  c) 42
  d) 50
  e) 60

30) What is the probability of choosing a student who is on the basketball team?

  a) .08
  b) .12
  c) 8/44
  d) 12/44
  e) 12/56

(B: basketball players   F: football players)

"The final exam is 97% of your grade. It is one question: find the surface area of the following pyramid...."

Math in Hell

"... There is no partial credit... Round your answer to the nearest centimeter..."
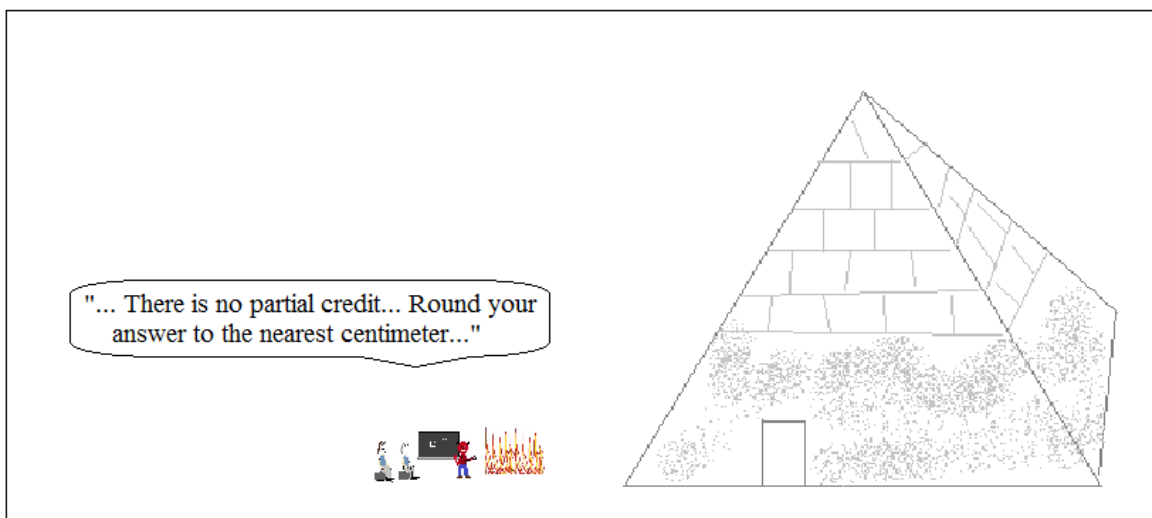
In its 1000 year history, no one ever passed Mr. Devlin's Geometry class.

SOLUTIONS -→

1) If $2x + 7 = 13$, what is $4x - 7$?

    a) 3

    b) 5

    c) 7

    d) −3

    e) −5

$$2x + 7 = 13$$
$$2x = 6$$
$$x = 3$$

Then, $4(3) - 7 = 5$

2) The mean of x and y is 9. And, the mean of x, y, and z is 11. What is z?

    a) 9

    b) 10

    c) 11

    d) 13

    e) 15

$$\frac{x+y}{2} = 9$$
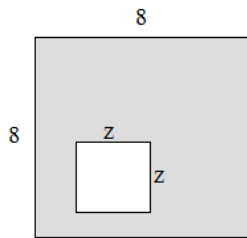$$x + y = 18$$

Then, $\frac{x+y+z}{3} = 11$

$$\frac{18+z}{3} = 11$$
$$z = 15$$

Example: $x = 6$ $y = 12$ $z = 15$

mean of x and y is 9
mean of x, y, and z is 11

3) What is the area of the shaded region?

(The figure is a square inside a square)

    a) $16 + 2z$

    b) $32 - 4z$

    c) $64 + z^2$

    d) $64 - z^2$

    e) $32 - z^2$

area of big square: $8 \times 8 = 64$

area of little square: $z \times z = z^2$

shaded area = big square − little square

$$= 64 - z^2$$

4) Team "hoops" scored 1/4 of their points in the 1st quarter; 1/3 of their points in the 2nd quarter; 1/5 of their points in the 3rd quarter.
If they finished with 60 points, how many did they score in the 4th quarter?

    a) 12

    b) 13

    c) 14

    d) 15

    e) 16

x = points in the 4th quarter

$$1/4(60) + 1/3(60) + 1/5(60) + x = 60$$
$$15 + 20 + 12 + x = 60$$
$$x = 13$$

5) $2^{2x+1} = 8^{x-1}$ Find x:

(rewrite with 'common bases')

    a) −1

    b) 2

    c) 4

    d) 1/2

    e) 2/3

$$2^{2x+1} = \left(2^3\right)^{(x-1)}$$
$$2^{2x+1} = 2^{(3x-3)}$$

Then, solve for the exponents...

$$2x + 1 = 3x - 3$$
$$x = 4$$

check: $2^9 = 8^3$ ✓
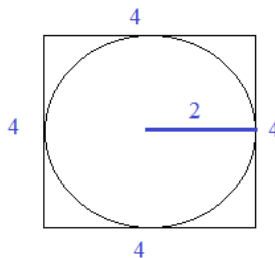
6) If 4 less than twice a number is ten, what is the number?

a) 4

b) 7

c) 18

d) 24

e) 30

let x = "the number"

$2x - 4 = 10$ ("4 less than twice a number is ten")

$x = 7$

7) The following is a circle inscribed in a square. If the perimeter of the square is 16, what is the area of the circle?

a) 4π

b) 8π

c) 16π

d) 24π

e) 32π

perimeter is 16, so each side is 4..

therefore, radius of inscribed circle is 2..

area of circle = $\pi(2)^2$

8) What is $f(g(2))$?

a) -1

b) 0

c) 2

d) 3

e) 5

$g(2) = 1$

$f(1) = 2$

x	f(x)
-1	-2
0	1
1	2
2	3
3	5

x	g(x)
-1	-3
0	-1
1	0
2	1
3	3

9) For the following sequence, $T_1 = 5$ $T_n = T_{n-1} + 3$

What is T_9 ?

a) 27

b) 29

c) 32

d) 33

e) 35

5, 8, 11, 14, 17, 20, 23, 26, 29

term: 1 2 3 4 5 6 7 8 9

T_1 to T_9 is 8 'moves'...   each move is +3...

Therefore, add (8 x 3) to T_1 $5 + 24 = 29$

10) What is the slope of a line parallel to $4x + 3y = 12$?

a) 4

b) −4

c) 3/4

d) −3/4

e) −4/3

(change to slope intercept form)

$3y = -4x + 12$

$y = -4/3x + 4$

11) $m + 3(n - 1) = p$ $n - 1 = ?$

    a) $\dfrac{m + p}{3}$

    b) $\dfrac{m - p}{3}$

    c) $\dfrac{p - m}{3}$

    d) $\dfrac{3m}{p}$

    e) $\dfrac{3p}{m}$

$3(n - 1) = p - m$

$(n - 1) = \dfrac{p - m}{3}$

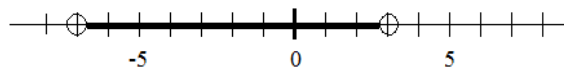12) Which of the following is

    a) $|x + 2| \geq 5$

    b) $|x + 2| > 5$

    c) $|x + 2| < 5$

    d) $|x + 2| \leq 5$

    e) none of the above

(open circles eliminate $\geq$ or $\leq$)

13)

$x + \dfrac{3}{x} = 5 + \dfrac{3}{5}$ Find x:

    a) 3/5

    b) 5/3

    c) 5

    d) 15

    e) 1/5

Each side of the equal sign is identical!
Just substitute x for 5..
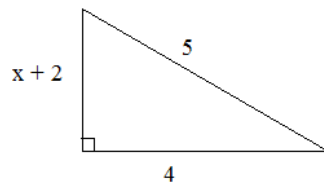
14) Find x:

    a) 0

    b) 1

    c) 3

    d) $\sqrt{2}$

    e) 9

pythagorean theorem
(or special 3-4-5 right triangle)

$x + 2 = 3$

$x = 1$

15) If you roll a 6-sided die twice, what is the probability that the first roll is greater than the second?

    a) 1/3

    b) 15/36

    c) 1/2
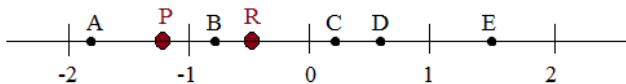
    d) 21/36

    e) 1

There are 36 possible outcomes:

6 are the 'same' : 1/1   2/2   3/3 ...
Of the 30 remaining,
15 will have 1st roll > 2nd roll
15 will have 2nd roll > 1st roll

16) Estimate P · R

   a) A

   b) B

   c) C

   d) D

   e) E

P and R are negative;
so, PR must be
positive...

R is approx. -1/2
P is approx. -5/4
PR is approx. 5/8

17) $3x - 2y = 21$

     If $y = x - 1$, what is x?

   a) 11

   b) 16

   c) 19

   d) 23

   e) 24

direct substitution:

$3x - 2(x - 1) = 21$

$3x - 2x + 2 = 21$

$x = 19$
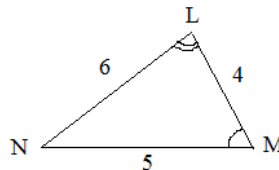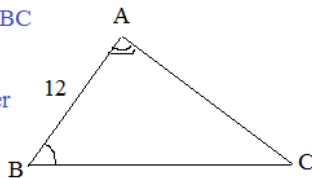
18) $\sqrt{3} \times \sqrt{6} =$

   a) $3\sqrt{2}$

   b) $3\sqrt{3}$

   c) 3

   d) $2\sqrt{3}$

   e) $3\sqrt{6}$

$\sqrt{18} = 3\sqrt{2}$

19) Find the perimeter of △ABC

   a) 2

   b) 15

   c) 30

   d) 35

   e) 45

ratio of LMN to ABC
is 6:12   or 1:2

therefore, perimeter
is 15: 30

20) The sum of 4 consecutive even integers is 900. What is the value of the smallest integer?

   a) 220

   b) 222

   c) 225

   d) 228

   e) 230

x = smallest integer
x + 2 = 2nd even integer
(x + 2) + 2 = 3rd even integer
((x + 2) + 2) + 2) = 4th even integer

the sum is $4x + 12 = 900$

$4x = 888$

$222 + 224 + 226 + 228 = 900$

$x = 222$

21) At the ice cream shop, there are 5 flavors and 3 toppings. If a child may order only 1
flavor with 1 topping, how many choices does he have?

    a) 3

                    5 flavors x 3 toppings = 15 possibilities

    b) 5

    c) 8

    d) 15

    e) 20

22) In the morning, you drove 45 mph to the beach. In the afternoon, you drove 30mph back home.
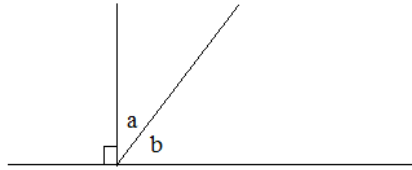If the total time in the car was 1 hour, how far do you live from the beach?

    a) 15 miles $d = rt$

                                         $45mph(t) = 30mph(1-t)$

    b) 18 miles

    c) 21 miles   to beach $d = 45mph\ (t)$ $45t = 30 - 30t$ $d = 45(2/5) = 18$

    d) 25 miles   to home $d = 30mph\ (1-t)$ $75t = 30$

    e) 37 miles

                                     $t = 2/5$

23) $\dfrac{x}{y} = \dfrac{3}{4}$ What is $\dfrac{4x}{3y}$?

    a) x   cross multiply

    b) y $4x = 3y$

    c) 4/3

                      divide both sides by 3y

    d) 1 $\dfrac{4x}{3y} = 1$

    e) 12

24) The ratio of a to b is 2:3. Find $\angle a$

    a) 30 $a + b = 90$

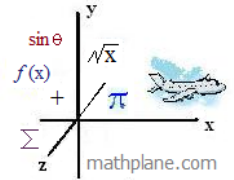   b) 32   (using the ratios)

                  $2x + 3x = 90$

    c) 36 $5x = 90$

    d) 40 $x = 18$

                  $a = 36$ $b = 54$

    e) 45

25) $x^2 + y^2 = 111$ $xy = 44$

    Find $(x + y)^2$

                        $(x + y)^2 = x^2 + 2xy + y^2$

    a) 111

                              $= x^2 + y^2 + 2xy$

    b) 155

    c) 178 $= 111 + 2(44)$

    d) 199 $= 199$

    e) 310

SOLUTIONS

26) What is 20% of .4 ?

   a) .08   .20 x .4 = .08

   b) .8

   c) 2

   d) 8   1/5 of .4 is .08

   e) 16

27) $2x < y < 0$ Which is the largest value?

   a) x   compare -- d and e: $-y > 2y$ (because y is negative)

   b) $-2y$ this eliminates d

   c) 2x   c and e: $-y > 0$ $2x < 0$

   d) 2y   this eliminates c

   e) $-y$ b and e: $-2y > -y$ (because both are positive)

                     a and b: $-2y > x$ (because x is negative)

28) $8^{2/3} + 9^{1/2} =$

   a) 6   4 + 3 = 7

   b) 7

   c) 10.5

   d) 12

   e) 14

29) Find the area of the trapezoid.

   a) 36

   b) 40   8   Area = $1/2 (b_1 + b_2)h$

   c) 42   5

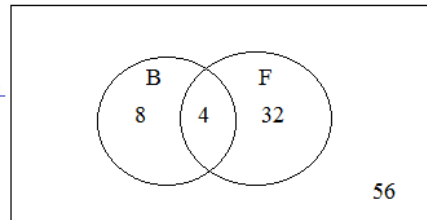   d) 50   4   = $1/2 (8 + 12)4$
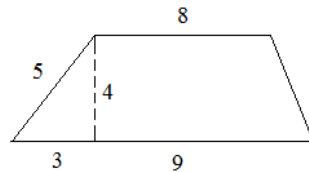
   e) 60   3   9   = 40

30) What is the probability of choosing a student who is on the basketball team?

   a) .08   (B: basketball players   F: football players)

   b) .12   probability = $\dfrac{\text{\# of 'successes'}}{\text{\# of 'outcomes'}}$

   c) 8/44

   d) 12/44   = $\dfrac{\text{12 basketball players}}{\text{100 total students}}$

   e) 12/56

              = .12

B   F

8   4   32

56

How did you do?!?

Want more test prep questions?

1) When x = 4 and y = −3, the value of $2x^2 - 2y$ is

    a) 10
    b) 22
    c) 26
    d) 38
    e) 54

2) A car gets 30 miles p
   how much will it cos

    a) $177
    b) $269
    c) $299
    d) $508
    e) $538

200 SAT/ACT Math Practice Questions

(and, Solutions)

3) Find the greatest common factor of 36, 84, and 132.

    a) 2
    b) 4

Available at mathplane.com – contact us or go to the travel log section. Or, visit TeachersPayTeachers.com

($5 for .pdf or .docx packet)

The proceeds go to site maintenance and treats for Oscar the dog.

We appreciate the support!