ACT Math Prep

Content:

- 14 questions dealing with Pre-Algebra
- 10 questions from Elementary Algebra
- 9 questions based on Intermediate Algebra
- 9 questions from Coordinate Geometry
- 14 questions from Plane Geometry
- 4 Trigonometry questions

Calculators:

ALL PROBLEMS ON THE ACT CAN BE SOLVED WITHOUT USING ACALCULATOR

- You may use a four-function, scientific, or graphing calculator
- Calculators such as TI-89 and TI-92 are *NOT* permitted (see actstudent.org)
- Bring a calculator that you know how to use – bringing a more powerful calculator that you *do not know how to use* isn't going to help you

Pace yourself:

- 60 questions
- 60 minutes
- The questions are arranged in order of difficulty
- Take 45 minutes to go through the test
  - > Answer the questions that you know how to do
  - > Guess on the questions you know you'll never get
  - > Mark the harder questions that you'll come back to later
- Spend the last 15 minutes going over the test again
  - > Answer the questions you skipped
  - > Make sure you have answered every question
  - > Spend any remaining time checking your work

General Tips:

- Don't read the directions (know them before you show up!)
- Bring a calculator that you know how to use
- Read the question carefully
- Pay attention to what the question asks you to find
- Watch for unnecessary information
- Draw a picture
- Pace yourself (60 questions/60 minutes)
- Do the easy questions first, then try the hard ones
- Show some work and circle your answers in your test booklet
- Don't waste too much time on one problem
- Eliminate wrong answers before guessing
- Answer every question
- Check your work
- Work for the whole 60 minutes

13.

# of students participating in sports:

$$\begin{bmatrix} 40 & 60 & 80 & 80 \end{bmatrix}$$

ratio of number of awards to number of students

$$\begin{bmatrix} 0.3 \\ 0.4 \\ 0.2 \\ 0.5 \end{bmatrix}$$

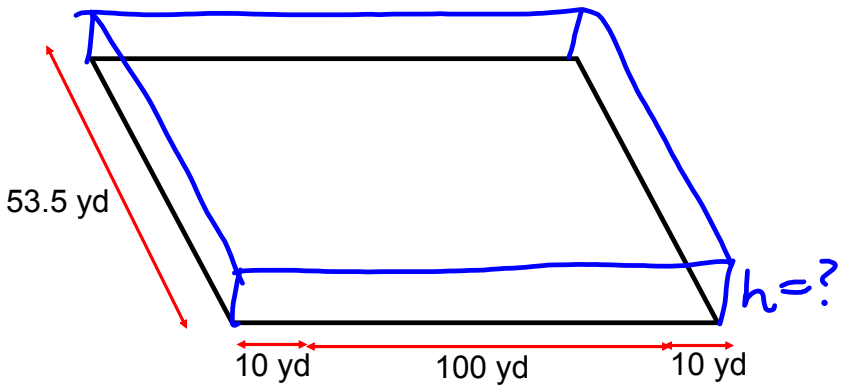
number of awards?

$40(0.3)+60(0.4)+80(0.2)+80(0.5)$

(# of students) $\times \frac{\text{\# of awards}}{\text{\# of students}} =$ # of awards

$$\begin{bmatrix} a & b & c \end{bmatrix} \cdot \begin{bmatrix} x \\ y \\ z \end{bmatrix} = ax+by+cz$$

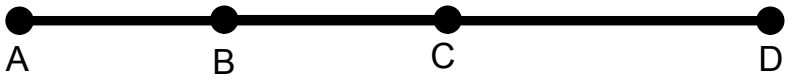
27. 10,000 cubic yards of snow = volume



$10000 = h \cdot 53.5 \cdot 120$

$\frac{10000}{53.5(120)} = h$

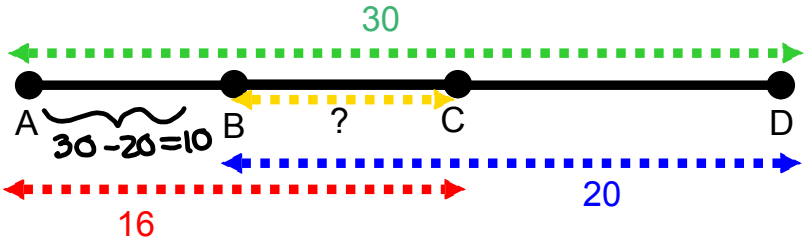
30.



AD = 30
AC = 16
BD = 20
BC = ?

F. 4
G. 6
H. 10
J. 14
K. Cannot be determined from the given information

30.



AD = 30
AC = 16
BD = 20
BC = ?

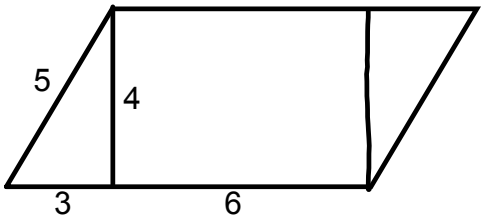
F. 4
G. 6
H. 10
J. 14
K. Cannot be determined from the given information

$AD = AB + BC + CD$

$AC + BD = AB + BC + BC + CD$

$= 30 + BC$

33. Area of parallelogram? $= bh = 4(3+6) = 36$



34. If $a=b+2$, then $(b-a)^4=$

$-2 = b - a$

$(-2)^4$

$(b-(b+2))^4$

$(-2)^4 = 16$

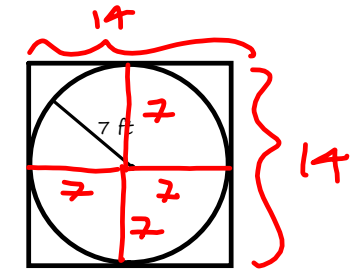
36. The larger of two numbers exceeds twice the smaller number by 8. The sum of twice the larger and 3 times the smaller number is 65. If x is the smaller number, which equation determines the correct value of x?

$y = 2x + 8$

$2(2x+8) + (3x) = 65$

J

38. Area of square?



$14^2 = 196$

43. GCF of x^2y^2 and xy^3 is $45 = 5 \cdot 3^2$

y=? xy^2

3

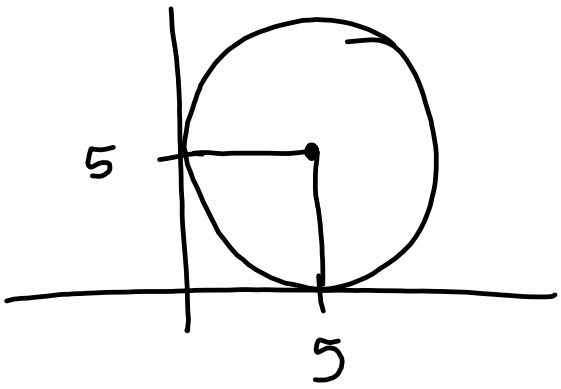
47. equation of circle tangent to x-axis at 5 and tangent to y-axis at 5

$(x-h)^2+(y-k)^2=r^2$

center: (h,k)

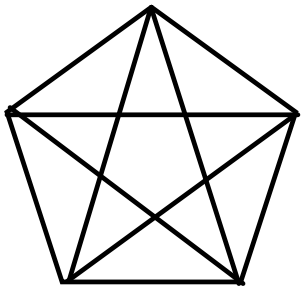
radius: r

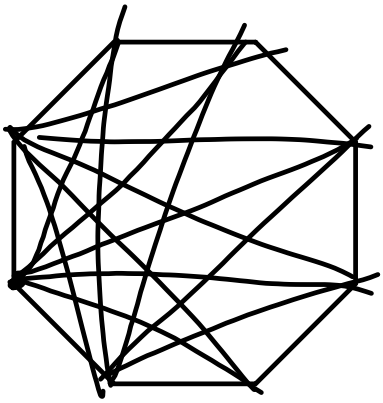
$(x-5)^2+(y-5)^2=25$



48. $\frac{1}{1+i}\cdot\frac{1-i}{1-i}=\frac{1-i}{1^2-i^2}=\frac{1-i}{1-(-1)}=\frac{1-i}{2}$

52.





$$\frac{n(n-3)}{2}$$

53.

25 % red
30% blue
20 % green
10% purple
% other

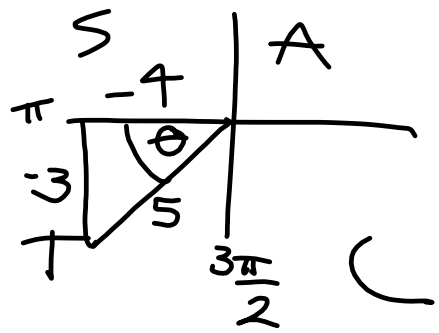
Degree measure of "other" sector?

$100 - 25 - 30 - 20 - 10 = 15\%$

$0.15(360^\circ) = 54^\circ$

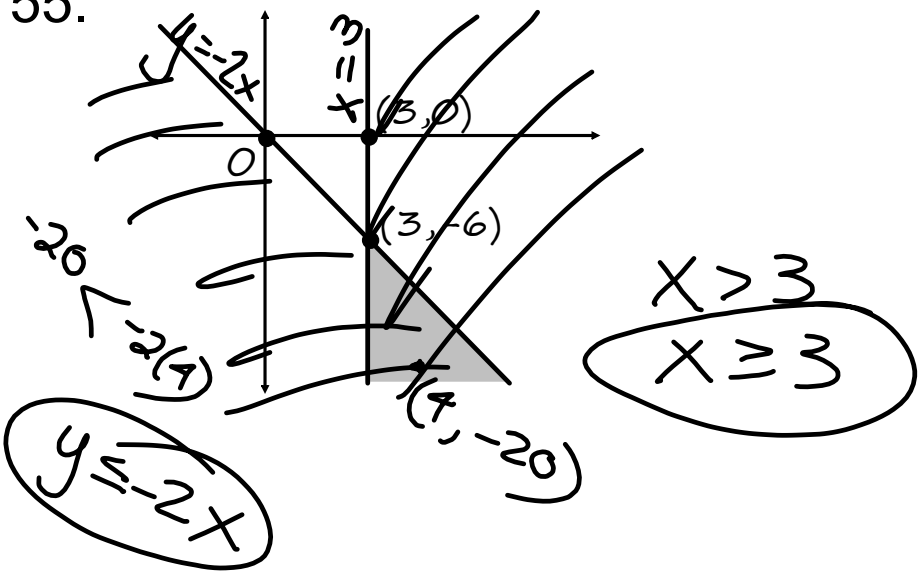
54.

If $\sin\theta = -\frac{3}{5}$, $\pi < \theta < \frac{3\pi}{2}$, $\tan\theta = ?$



$\frac{3}{4}$

55.

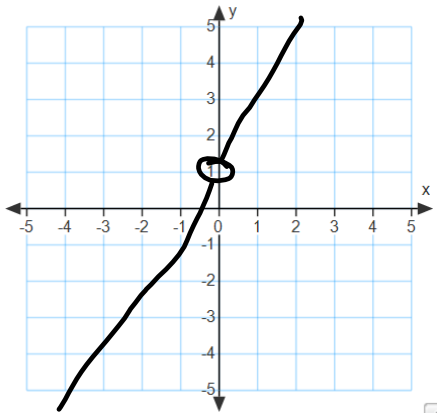


$y \leq -2x$

$x > 3$

$x \geq 3$

57. $y = \dfrac{2x^2 + x}{x} = \dfrac{x(2x+1)}{x} = 2x+1 \quad , x \neq 0$



60. $\sin\dfrac{\pi}{12} = \sin\left(\dfrac{\pi}{3} - \dfrac{\pi}{4}\right)$

$= \sin\dfrac{\pi}{3}\cos\dfrac{\pi}{4} - \cos\dfrac{\pi}{3}\sin\dfrac{\pi}{4}$

$= \dfrac{\sqrt{3}}{2}\cdot\dfrac{\sqrt{2}}{2} - \dfrac{1}{2}\cdot\dfrac{\sqrt{2}}{2}$

$= \dfrac{\sqrt{6}}{4} - \dfrac{\sqrt{2}}{4} = \dfrac{\sqrt{6}-\sqrt{2}}{4}$

Test 2, #37

Which is NOT true about the arithmetic sequence 17, 12, 7, 2, ...
A fifth term is -3
B. sum of the first 5 terms is 35
C. eighth term is -18
D. common difference is -5
E. common ratio is -5

Test 3, #39-41
end-on view of cylindrical milk tank on its support
radius of tank is 4 feet
length of tank is 25 feet
39. volume of tank $\pi r^2 h = \pi \cdot 4^2 \cdot 25$
40. if there are 5000 gallons of milk in tank, and a gallon of milk weighs 8 pounds, how many pounds of milk are there?
41. center of circular end of tank is 2 ft above top level of support; what is width in feet of the support?

$5000 \text{ gal} \cdot \frac{8 \text{ lb}}{\text{gal}} = 5000(8)$