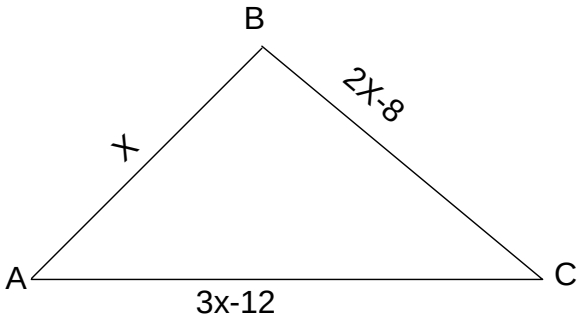
Franklin Math Bowl, 2008, Grade 8

1. If the perimeter of triangle *ABC* is 82, find the length of the longest side.

a) 49 b) 26 c) 39 d) 17



2. If 45% of a number is 15, find the number.

a) 6.75 b) 8.25

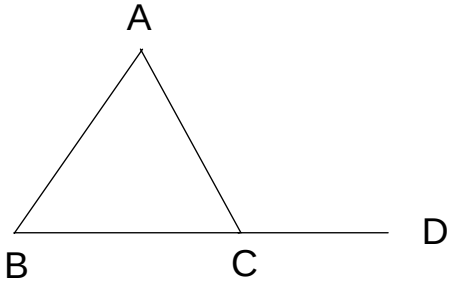
c) 100 d) $33\frac{1}{3}$

3. Solve for *x*: $-2(x-5) = 2(3x-2)$

a) $\frac{3}{4}$ b) $\frac{7}{4}$ c) $-\frac{3}{4}$ d) $\frac{3}{2}$

4. $\angle B \cong \angle C$ and $m\angle A = 42°$. Find $m\angle ACD$.

a) 111° b) 138° c) 69° d) 42°



5. If $P = \frac{\frac{1}{2}a+b+c}{8}$, find *a* if $P = 76$, $b = 9$, $c = 30$.

a) 569 b) 18.5 c) 1138 d) 74

6. How many digits are in 1000 trillion?

a) 16 b) 10 c) 12 d) 13

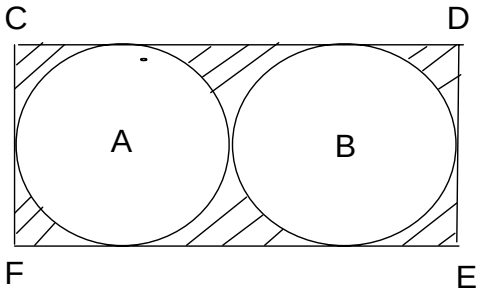
7. What is the probability something will happen when the odds it will occur is 2:3?

a) 50% b) 20%

c) 40% d) $66\frac{2}{3}\%$

8. The rectangle *CDEF* contains 2 congruent circles and its side $\overline{CD}$ measures 10½ inches. Find the area of the shaded region.

a) 33.5 b) 13.8 c) 55.1 d) 11.8



9. If grades on 4 tests were 90, 67, 80, and 95, what grade is needed on test 5 to maintain a grade of 85 or higher?

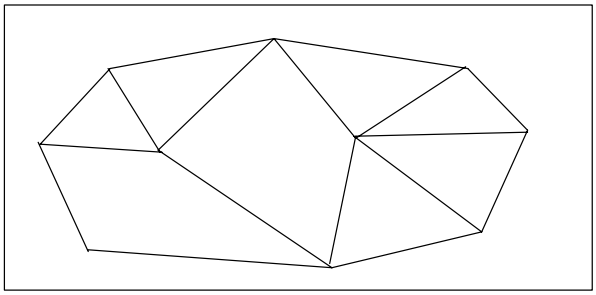
a) 88 b) 90 c) 93 d) 85

10. If $x + 5x + 6x = 72$, then $\frac{2x}{3} - 3 = ?$

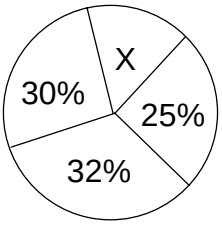
a) 0 b) 6 c) 1 d) 3

11. If no 2 regions with a common boundary have the same color, and regions that meet at 1 point can be the same color, what is the fewest number of colors that can be used in this picture?

a) 2 b) 3
c) 6 d) 8



12. If this pie chart represents funding for 4 projects, what is the dollar value of the *X* portion if all 4 projects together total 4.8 million dollars?

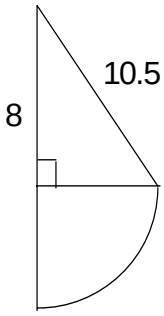


a) $624,000 b) $1,104,000
c) 1,248,000 d) $144,000

13. If a farmer has chickens and sheep, how many sheep are there if the animals total 60 legs and 21 heads?

a) 12 b) 9 c) 6 d) 10

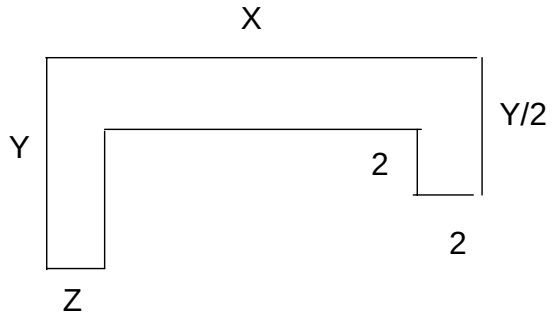
14. Find the area of this figure.



a) 38.8 b) 11.6 c) 63.5 d) 172.5

15. Determine the perimeter of the figure to the right. (All angles are right angles.)

a) $2x + 2y + 4$ b) $2x + 2y + z + 6$
c) $x + 2y + z + 6$ d) $2x + y + z + 4$



16. If $y = 12 - (\frac{1}{2}x - 2)$ and $2y = \frac{1}{2}x - 10$, find $x - \frac{1}{2}$.

a) $13\frac{1}{2}$ b) $38\frac{1}{2}$
c) $24\frac{5}{6}$ d) $37\frac{1}{2}$

17. What is the value of $2 + 2^2 \times (2 + 2)^3 \times 3^2 + 3$?

a) 270 b) 585 c) 37 d) 2309

18. The standard slope for a wheelchair ramp is 1 inch rise for 1 ft run. How much horizontal distance would be required to give a 2 ½ ft rise?

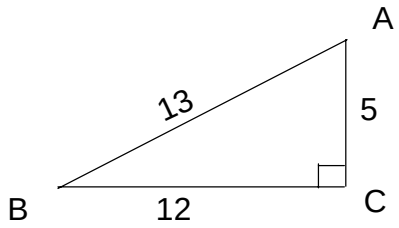
a) 30 ft b) 25 ft c) 30 inches d) 24 ft.

19. The Smith's house was worth $120,000 in 2000 and increased a yearly average of 8% through 2008. If they pay a tax of $15 per $1000 on its present value, how much tax will they pay in 2008?

a) $3331.00 b) $2952.00 c) $9600.00 d) $1452.00

20. If the cosine of an acute angle is the length of the leg adjacent to the angle divided by the hypotenuse, and the secant is the reciprocal of the cosine, fine the secant of angle A.

a) $\frac{5}{13}$ b) $\frac{5}{12}$ c) $\frac{13}{5}$ d) $\frac{13}{12}$



21. A coach is choosing boys for a basketball team. In how many different ways can 5 boys be chosen from 6 who want to play?

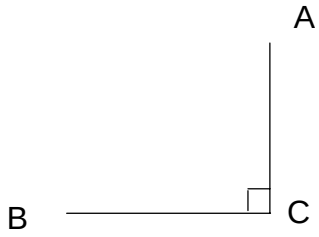
a) 1 b) 6 c) 5 d) 13

22. If a 3 inch diameter hose can fill a pool in 10 hours and together with a second hose both can fill the pool in 6 hours, how long would it take the second hose alone to fill half the pool?

a) 15 b) 8 c) 9 d) 7½

23. If a car travels from point A to point C at 65 mph and took 3 hr, 10 min and then from C to B, what would his speed have to be from C to B, to equal his time getting directly from A to B at 55 mph, if AB is 220 miles?

a) 93.4 mph b) 77.8 mph
c) 64.8 mph d) 60 mph



24. If a merchant expects to make a 20% profit on a garment and has 2 consecutive discounts on that item of 10% each, how much would an item which cost the merchant $60.00 have to sell for after all discounts?

a) $89 b) $90 c) $72 d) $92

25. A parallelogram has coordinates as indicated in the diagram. If a larger parallelogram is drawn by multiplying each coordinate by 4, how does the perimeter of the larger compare to the perimeter of the smaller?

a) $1\frac{1}{2}$:1 b) 2:1
c) 4:1 d) 16:1