

ALGEBRA 1 INDIVIDUAL

1. Ian's age= x , Robert's age= $7x$; 12 years Ian's age= $x+12$, Robert's age= $7x+12$,
 $x+12=(1/3)(7x+12)$, $3x+36=7x+12$, $4x=24$, $x=6$, Robert's age= 42 , D
2. $b^2-4ac=64-4(1)(3)=52$, A
3. 8 gallons in 5 hours \rightarrow 1.6 gallons in 1 hour, so in 16 hours, 25.6 gallons will be used, D
4. $(-b/2a)=0$, which is the x-coordinate of the vertex. Substituting in this to get the y-coordinate of the vertex is -4 , $(0,-4)$, C
5. $(-5,-2)$ and $(3,-1)$, the slope of the line is $1/8$, using point slope, $y+1=(1/8)(x-3)$,
 $8y+8=x-3$, $x-8y=11$, D
6. Probability Lily makes it is $2/3$ while the probability that Landon DOESN'T make it is $2/7$, thus the probability is $4/21$, A
7. $x=ky/z$, where k is the constant. $6=k(8)/12$, $k=12(6)/8=9$, D
8. $2(\pi)(r)=16$, $r=8/(\pi)$, $\text{area}=(\pi)r^2=64/\pi$, B
9. $(7/14)+(8/14)=15/14$; $(-25/30)+12/30=-13/30$, $1/(-13/30)=-30/13$; $(15/14)/(-13/30)=(15/14)(-30/13)=-450/182$, A
10. $(\sqrt{6})^2+6^2=42=d^2$, $d=\sqrt{42}$, B
11. $-6x+9y=39$; $6x-4y=-4$, summing the equations gives $5y=35$, $y=7$, $21-2x=13$, $2x=8$,
 $x=4$, $x+y=11$, C
12. $(7)(5^0)+2(5^1)+4(5^2)=7+10+100=117$, C
13. $2+3+1=6$, C
14. B
15. $16=x^4$, $x=\pm\sqrt[4]{16}$, C
16. $4x+5=4x-144$, $5=-144$, which is a contradiction, there are no solutions, E
17. $80(.60)+x/(x+80)=0.75$, $0.75x+60=48+x$, $0.25x=12$, $x=48$, C
18. $5x+6=60$, $x=54/5$, $5x+6=-60$, $5x=-66/5$, absolute value sum is
 $66/5+54/5=120/5=24$, D

19. $6!/(2!2!)=180$, C

20. They would like to win at least 30 games, they have won only 18 games out of the first 30. Thus in the next 20 they want to win at least 12, which means they could lose at most 8, E

21. By definition, C

22. $5^2-2(5)(4)=25-40=-15$, D

23. $3^4=81$, A

24. Multiplying the 2nd equation by 2 gives us the same equation as the first, thus it is both consistent and dependent. The question seems to imply that only one answer is correct, but a complete answer would include both consistent and dependent. A or C or E.

25. The slope of this line is $4/3$, thus the slope of the perpendicular line is $-3/4$, C

26. Product of the roots is given by the last coefficient over the first coefficient, with sign changes, -2, B

27. $x^{(-4+2)}y^{(3+6)}z^{(5-9)}=x^{(-2)}y^{(9)}z^{(-4)}$, B

28. $7(8)/2=28$, A

29. $x^2+y^2=(x+y)^2-2xy=333$, $(x+y)^2-108=333$, $(x+y)^2=441$, $x+y=21$, B

30. If triangle ABC was a right triangle with hypotenuse 10, the altitude would be 4.8, but this altitude has length 4.7, slightly lower than the right triangle. The altitude of an obtuse triangle is less than the altitude of the right triangle, thus we can classify this triangle as obtuse, B