1.
A. (x/3)/2=k+1 <=> x=6k+3 <=> x= 9,15,21,...
Plug in numbers: 9/4 gives remainder of 1, 15/4 gives remainder of 3 => **Insufficient**
B. x/5 is an integer. Since x>0 that means that x=5k <=> x=5,10,15...
Plug in numbers: 5/4 gives remainder of 1, 10/4 gives remainder of 2 => **Insufficient**
C. Plug in numbers by finding mutual possible values for x, e.g.: 15, 45.
15/4 gives remainder of 3. 45/4 gives remainder of 1. => **Insufficient**

So answer is E.

The key problem with statement (1) is that we don't have any comparison between what was sold in the first half and the second half of the year. For example, maybe it sold 100 total units the first half, while selling only selling 6 units the second half. This would result in a different answer than if the store sold 10 units the first half and 300 units the second half.

In a more algebraic approach,
Gross Revenue = Number of Sales * Unit Price

So if we look at the unit price, the price of computers was five times higher than its printers. So in terms of unit price, we can let p = price of printer, 5p = price of computer.

For the first half of the year, the ratio of computers to printers sold is 3:2, so we can say it sold 3x computers and 2x printers. For the second half of the year, the ratio of computers to printers sold is 2:1, so we can say it sold 2y computers and y printers.

During the year, the company sold 3x + 2y computers, so the gross profit for computers is (3x + 2y) * 5p. Likewise, the company sold 2x + y printers, so the gross profit for printers is (2x + y) * p. If you set up the ratio for the gross profits of computers and printers:

5p(3x+2y) / p(2x + y)
= (15x + 10y) / (2x + y)

You'll see that we cannot determine the exact value of the ratio, because we don't know x and y.

So the answer is E

3. Lets formalize the information.The trucker paid a total of 155.76 including taxes of 10%, thus excluding taxes he paid 155.76/1.1

A. We are informed that the trucker paid $0.118 pr. gallon in taxes. Formalizing this information we get that:
p*1.1 - p = $0.118 <=> p(1.1-1)= $0.118 <=> p= $0.118/0.1 = 1.18. To exclude taxes just divide by 1.18/1.1. **Sufficient**
B. Formalize the information. We know the trucker paid a total of 155.76/1.1 excluding taxes. To get the price pr. gallon

exluding taxes just divide by with 20. **Sufficient**

Hence answer is D.

4.

A. x/12 = k+5 <=> x=12k+60 <=> x=72, 84, 96,....
Plug in numbers: 72/8 gives a remainder of 0, 84/8 gives a remainder of 4. **Insufficient**

B. x/18 = k+11 <=> x=18k+11 <=> x=29,47,65
Plug in numbers: 29/8 gives a remainder of 5, 47/8 gives a remainder of 1. **Insufficient**
C. Since A will always be even while B will always be uneven and there are no mutual values.
Insufficient

Hence answer is E.

5.Remember the formula time*speed=distance <=> t*S=d

A. We are only given relative information on two of the three drivers, hence **Insufficient**
B. We are told that Marsha drives 9*50 = 450 < (1/3)*1500, so Marsha cannot have driven the longest distance.
That leaves Al and Pablo and therefore this statement is **Insufficient**
c. We know from (2) that Marsha cannot be the answer. The distance left is 1500-450 = 1050 miles. Moreover, we know from (1) that Al drove one hour longer than Pablo, 5 miles pr. hour slower. By formalizing information we have one equation in two unknowns which is **Insufficient**

Answer is E.

6. perfect sq are 1,4,9,16,25,36 etc
A) option A says 23 < d < 33
if d=24 then perfect sq less than d are 1,4,9,16
id d=26 then perfect sq less than d are 1,4,9,16,25

hence insuff

B)option B says 27 < d < 37

if d=28 then perfect sq less than d are 1,4,9,16,25
if d=36 then perfect sq less than d are 1,4,9,16,25

hence suff
ans is B

7. let's translate:

Quote:

m is not a factor of p.

if m *were* a factor of p, then the remainder upon dividing p by m would be 0.

therefore, we can translate the above statement as follows:
"**the remainder upon dividing p by m is not 0.**"
in other words, it's an integer greater than 0.

--

the question:

Quote:

is r > 1 ?

here's a **HIGH-LEVEL INTERPRETATION** of this problem.

if the remainder WERE 1, then p would be 1 more than a multiple of m.
if this is the case, then p and m CANNOT have any common factors, other than 1. (this is so because all factors of m are factors of (p-1), which is a multiple of m; a number greater than 1 can't be a factor of both (p-1) and p, which are consecutive integers.)

therefore, **if m and p have common factors, then the answer to this question is YES.**

(note that the converse is not necessarily true: even if there are *no* common factors, the answer still *could* be yes. for instance, 17 divided by 6 leaves a remainder of 5, even though 17 and 6 have no common factors. but, if we can establish that there *are* common factors, then that's enough to show that the answer is Yes.)

--

statement (1)

if this is true, then m and p have the factor 2 in common, so, YES.
sufficient.

--

statement (2)

this doesn't tell you whether m and p have common factors.
if m = 5 and p = 6, for instance, then r = 1.
if m = 10 and p = 15, then r = 5, which is > 1.
insufficient.

ans (a)

8. A scientist is studying bacteria whose cell population doubles at constant intervals, at which times each cell in the population divides simultaneously. Four hours from now, immediately after the population doubles, the scientist will destroy the entire sample. How many cells will the population contain when the bacteria is destroyed?
(1) Since the population divided two hours ago, the population has quadrupled, increasing by 3,750 cells.
(2) The population will double to 40,000 cells with one hour remaining until the scientist destroys the sample.

This one is really tough.

Before considering the statements let's look at the stem:
A. Population doubles at constant intervals, but we don't know that intervals.
B. Experiment will end in 4 hours from now.
C. We don't know when bacteria divided last time, how many minutes ago.

(1) Population divided 2 hours ago and increased by 3750 cells. Note that this statement is talking that bacteria quadrupled during 2 hours before NOW. So, starting point 2 hours ago, end of experiment 4 hours from now. Total 6 hours.
This statement gives ONLY the following info:
A. population of bacteria TWO hours ago - 1250.
B. population of bacteria now - 5000.

But we still don't know the interval of division. It can be 45 min, meaning that bacteria divided second time 30 min ago OR it can be 1 hour, meaning that bacteria just divided. Not sufficient.

(2) An hour before the end of experiment bacteria will double 40.000. Clearly insufficient.

(1)+(2) We can conclude that in 5 hours (2 hours before now+3 hours from now) population of bacteria will increase from 1250 to 40.000, will divide 5 times, so interval is 1 hour. The population will contain 40.000*2=80.000 cells when the bacteria is destroyed. Sufficient.

I think this one was the toughest. I've already given the solution for this one previously, so here it is:

Before considering the statements let's look at the stem:
A. Population doubles at constant intervals, but we don't know that intervals.
B. Experiment will end in 4 hours from now.
C. We don't know when bacteria divided last time, how many minutes ago.

(1) Population divided 2 hours ago and increased by 3750 cells. Note that this statement is talking that bacteria quadrupled during 2 hours before NOW. So, starting point 2 hours ago, end of experiment 4 hours from now. Total 6 hours.
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Answer: C.

The point is that from (1) we can not say what the interval of division is, hence it's not sufficient.
Please, tell me if you find this explanation not convincing and I'll try to answer your doubts.

9. Rewrite the expression X^2=xy <=> xx=xy <=> x=y, thus the question reduces to whether x=y.

A. Rewrite (1): (x+y)(x-y) = (x+5)(y-5). This equation is solved for x=y=5, but not for
x=y=0. Thus the information is insuficcient.
B. Since the question reduced to whether x=y and we are told that x=y this is clearly **Sufficient**

So answer is B.

10. Since there are 20 oranges to be distributed and all baskets contain one orange, there can be a maximum of 20 baskets. Furthermore since they are evenly distributed only these combinations (orange X baskets) remain: , 10*2, 5*4, 4*5, 2*10,

and 1*20.

A. This gives no additional information and is clearly **Insufficient**
B. There can be either 20, 10, 5, or 4 baskets. Since there are 20 oranges there number of baskets can be doubled without

problems for 10, 5 and 4 baskets. Thus there must be 20 baskets. **Sufficient**

So answer is B.

11.Since P is a prime greater than 2 it must be odd.

A. Since p+1 is even and >2 and thus is not a prime number, p must be the 99. (since we are excluding 2)
prime number (have no idea what that is though). **Sufficient**
B. Again this can be counted straightforward. Find out how many primes there are in the interval and subtract 1
(because of 2). **Sufficient**

Answer is D.

12. The LCM of 6 and 9 is are both factors of 3, but e.g. 9 is not a factor of 2, so the LCM of 6 and 9 is 18.

A. Since the LCM of x and 6 is 30, x must be a factor of 5. Thus the LCM is 18*5 = 90. **Sufficient**
B. Since the LCM of x and 9 is 45, x must be a factor of 5. Thus the LCM is 18*5 = 90. **Sufficient**

So answer is D.