DS Traps Solutions

1.

From (1), we will surely get r, so sufficient. It does not matter what r is: if it is <8%, we get a confirmed NO. If it is equal to 8%, we get a confirmed NO. If it is >8%, we will get a confirmed YES.

From (2), we get $(1.08)^2 = 1.1664$ ... so for the rate to be more than 8%, the value of $(1+r/100)^2$ must be more than 1.1664. We are given $(1+r/100)^2 > 1.15$ ... so (2) is not sufficient as >1.15 may be 1.155 (which is less than 1.1664) or it may be 1.17 (which is more than 1.1664). So Answer A.

2.
(1) y can have any values ... suppose y = 1, 2, 3 ... then for each value of y, we will get various values of x. Imagine taking the equal to sign, $|x – 3| = 1$ or 2 or 3 etc. we will not get a unique value of x. There will be infinite possible values of x.
(2) $|x – 3| \leq – y$ ... we can't take y as positive as $|x – 3|$ will become negative so the only value of y can be 0. When y = 0, $|x – 3| \leq 0$. As $|x – 3|$ can't be less than zero (by the definition of mods), so the only value of $|x – 3|$ can be 0, so if $|x – 3| = 0$, x will have a unique value as x = 3. Ans. B

3.
plug in numbers to the number line here:
Statement (1)

if the line reads: r = –1, zero, s = 1, t = 3, then zero is halfway between r and s. if the line reads: zero, r = 1, s = 2, t = 3, then zero is not between r and s. Insufficient.

Statement (2)
by
definition zero is halfway between s and –s.

a) if the line reads: –s = r = –2, zero, s = 2, and t = 4, then (t to r) = (t to –s) = 6.
zero is halfway in between r and s.

b) if the line reads: r = – 4, s = – 2, t = –1, zero, and –s = 2, then (t to r) = (t to –s) = 3.
zero is not halfway in between r and s.

Insufficient.

Together)
Forces the case 2a). Sufficient ... Ans. C

4.

$y = x + |x|$ ... so y depends on x ... x can be –ve, 0, or +ve.
If x is –ve, y = 0, if x = 0, y = 0, if x = +ve, y = +ve. So y can't be negative.
Statement 1 is sufficient: If x is –ve, y = 0.
Statement 2 is y < 1, since y is an integer, and it is never negative, it can be 0 only if it is less than 1.
So Statement 2 is sufficient too. Answer is D

5.

It's obvious that you can get a YES answer to the question; all you have to do is take ridiculously big numbers for x and y, and a small number for z. for instance, x = y = 100, z = 0, satisfy both statements, and clearly give a YES answer.
So, you're trying for a NO answer. Try to make Z as big as possible while still satisfying the criteria (i.e., less than $x^2 + y^2$). Let's let x = y = 3
then to satisfy both statements, we need z^2 less than 18, and z less than 6. We'll take z = 4, which is pushing the limit of the first one. In this case, then, $x^4 + y^4 = 81 + 81 = 162$, but $z^4 = 256$, giving a NO answer. Insufficient Answer = e

6.
statement (1)

let's just PICK A WHOLE BUNCH OF NUMBERS WHOSE GCF IS 2 and watch what happens. let's try to make the numbers diverse.
say,
4 and 6
6 and 8
8 and 10
10 and 12
...
4 and 10
6 and 14
6 and 16
8 and 18
8 and 22
...
in all nine of these examples, the remainders are greater than 1. in fact, there is an obvious pattern, which is that **they're all even**, since the numbers in question must be even. **in statement 1, both m and p are even. therefore, the remainder is even, so it's greater than 1.**

done.

sufficient.

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statement (2)
just pick various numbers whose lcm is 30.
notice the numbers selected above:
5 and 6 --> remainder = 1
10 and 15 --> remainder = 5 > 1
insufficient.

ans (a)

7.
"xy + z is odd"
case 1: xy is odd, z is even
there's only one way this can happen:
x = odd, y = odd, z = even. **(1)**
case 2: xy is even, z is odd

there are 3 ways in which this can happen:
x = even, y = even, z = odd (2a)
x = odd, y = even, z = odd (2b)
x = even, y = odd, z = odd (2c)

statement (1)
x(y + z) is even.
* if x is even, regardless of (y + z), then the answer to the prompt question is "yes" and we're done.
* the other possibility would be x = odd and (y + z) = even. this is impossible, though, as it doesn't satisfy any of the cases above.
therefore, the answer must be "yes".
sufficient.

—

statement (2)y + xz is odd.

* y = even, xz = odd —> That's case (2b) and (2c), which gives x can be even or odd.

insufficient.

ans = a

8.

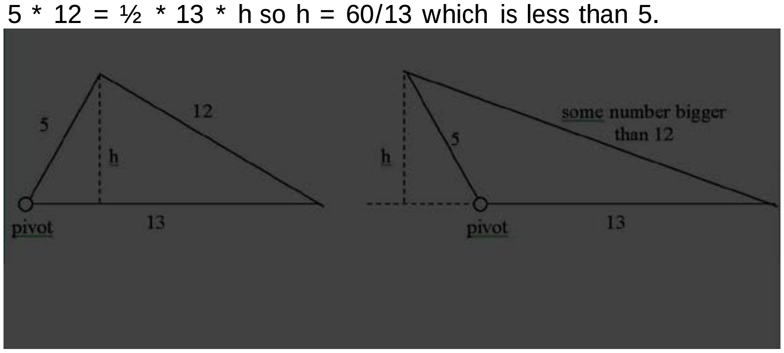
We must realize that (a – b) and (b – a) are of opposite signs. So
(1) if a < b, a – b < 0 so 1 / (a – b) < 0, so b – a > 0
So the question: Is 1 / (a–b) < (b–a)" becomes "Is –ve < +ve, Answer Yes, so (1) is sufficient.
(2) |a – b| > 1 ... (a, b) can be (3, 1) and (1, 3)

If (a, b) = (3, 1), we get (a – b) as +ve so 1 / (a – b) as +ve and (b – a) as –ve and the question "is 1 / (a–b) < (b–a)?" becomes "is +ve < -ve" Ans. NO.

If (a, b) = (1, 3), we get (a – b) as -ve so 1 / (a – b) as -ve and (b – a) as +ve and the question "is 1 / (a–b) < (b–a)?" becomes "is -ve < +ve" Ans. YES. So Not sufficient. Ans. A

9.

(1) SUFFICIENT: If we know that ABC is a right angle, then triangle ABC is a right triangle and we can find the length of BC using the Pythagorean theorem. In this case, we can recognize the common triple 5, 12, 13 - so BC must have a length of 12.
(2)
½ * 5 * 12 = ½ * 13 * h so h = 60/13 which is less than 5.



INSUFFICIENT: If the area of triangle ABC is 30, the height from point C to line AB must be 12 (We know that the base is 5 and area of a triangle = 0.5 × base × height). There are only two possibilities for such such a triangle. Either angle CBA is a right triangle, and CB is 12, or angle BAC is an obtuse angle and the height from point C to length AB would lie outside of the triangle. In this latter possibility, the length of segment BC would be greater than 12.

The correct answer is A.

10.

(1)

	Japanese	NOT Japanese	TOTALS
French	0.04 F = 16		F
Not French			
TOTALS	J ≥ 100		

(1) gives 0.04 F = 16 so F = 400 but we don't know how many students study Japanese. Insufficient.

(2)

	Japanese	NOT Japanese	TOTALS
French	0.04 F = 0.1 J		F
Not French			
TOTALS	J ≥ 100		

(2) gives 0.04 F = 0.1 J so F / J = 5 / 2 so F > J. Sufficient. Answer B.

11.
(1): x^3 could be 11 or 27 or 97... so not a unique value
(2): x^4 could be 11 or 27 or 97... so not a unique value (also, x could be positive or negative)

Combining:

$x = x^4/x^3$ = Integer / Integer = a rational number ... so x can't be irrational ... so x^3 can't be any other number except 27. So x = 3
Ans. (C)

12.
(1): x ≠ 0, could be + or –ve.
(2) x = 0 or –ve.
Comb... x is negative. Ans. (C)

13.
(1) INSUFFICIENT: We are told that 5*n*/18 is an integer. This does not allow us to determine whether *n*/18 is an integer. We can come up with one example where 5*n*/18 is an integer and where *n*/18 is **NOT** an integer. We can come up with another example where 5*n*/18 is an integer and where *n*/18 **IS** an integer.

Let's first look at an example where $5n/18$ is equal to the integer 1.
If $5n/18 = 1$, $n/18 = 1/5$ ... not integer
If $5n/18 = 5$, $n/18 = 1$ ... integer
Thus, Statement (1) is NOT sufficient.
(2) INSUFFICIENT: We can use the same reasoning for Statement (2) that we did for statement (1). If $3n/18$ is equal to the integer 1, then $n/18$ is NOT an integer. If $3n/18$ is equal to the integer 3, then $n/18$ IS an integer. **This tells us n is a multiple of 6.**
(1) AND (2) SUFFICIENT: If $5n/18$ and $3n/18$ are both integers, the difference of $5n/18$ and $3n/18$ will also be integer (integer – integer = integer)
So $5n/18 - 3n/18 = 2n/18 = n/9$ = integer...

Subtracting again:

$3n/18 - 2n/18$ = integer – integer ... so $n/18$ = integer ... sufficient. Ans. C

OR

$2n/18 = n/9$ = integer... **n is a multiple of 9**... So n is a multiple of both 6 and 9... so n is a multiple of 18. **The correct answer is C.**

14.
The possible values of n should be computed right away, to rephrase and simplify the question. Note that n consecutive positive integers that sum to 45 have a mean of $45/n$, which is also the median of the set; therefore, the set must be arranged around $45/n$. Also, any set of consecutive integers must have either an integer mean (if the number of integers is odd) or a mean that is an integer + 1/2 (if the number of integers is even). So, if we compute $45/n$ and see that it is neither an integer nor an integer +1/2, then we can eliminate this possibility right away.
Setting up a table that tracks not only the value of n but also the value of $45/n$ is useful.

n	$45/n$	n positive consecutive integers summing to 45
1	45	45
2	22.5	22, 23
3	15	14, 15, 16
4	11.25	none
5	9	7, 8, 9, 10, 11
6	7.5	5, 6, 7, 8, 9, 10
7	6 3/7	none
8	5 5/8	none
9	5	1, 2, 3, 4, 5, 6, 7, 8, 9
10	4.5	0, 1, 2, 3, 4, 5, 6, 7, 8, 9 -- but this doesn't work, because not all are positive integers
...	...	impossible (the set will include negative integers, if an integer set can be found at all)

(1) INSUFFICIENT: If n is even, n could be either 2 or 6. Statement (1) is NOT sufficient.

Alternatively, to find these values algebraically, you can use the following procedure.
The sum of two consecutive integers can be represented as $n + (n + 1) = 2n + 1$
The sum of three consecutive integers = $n + (n + 1) + (n + 2) = 3n + 3$
The sum of four consecutive integers = $4n + 6$

The sum of five consecutive integers = $5n + 10$
The sum of six consecutive integers = $6n + 15$

Since the expressions $2n + 1$ and $6n + 15$ can both yield 45 for integer values of n, 45 can be the sum of two or six consecutive integers.

(2) INSUFFICIENT: If $n < 9$, n could again take on either of the values 2 or 6 (or 3 or 5 according to the table or the expressions above)

(1) and (2) INSUFFICIENT: if we combine the two statements, n must be even and less than 9, so n could still be either of the values: 2 or 6.

The correct answer is E.

15.
(1) INSUFFICIENT: Since x^2 is positive whether x is negative or positive, we can only determine that x is not equal to zero; x could be either positive or negative.
(2) INSUFFICIENT: By telling us that the expression $x \cdot |y|$ is not a positive number, we know that it must either be negative or zero. If the expression is negative, x must be negative ($|y|$ is never negative). However if the expression is zero, x or y could be zero.
(1) AND (2) INSUFFICIENT: We know from statement 1 that x cannot be zero, however, there are still two possibilites for x: x could be positive (y is zero), or x could be negative (y is anything).

The correct answer is E.

16.

(1) INSUFFICIENT: This expression provides only a range of possible values for x.

(2) SUFFICIENT: Absolute value problems often -- ***but not always*** -- have multiple solutions because the expression *within* the absolute value bars can be either positive or negative even though the absolute value of the expression is always positive. For example, if we consider the equation $|2 + x| = 3$, we have to consider the possibility that $2 + x$ is already positive and the possibility that $2 + x$ is negative. If $2 + x$ is positive, then the equation is the same as $2 + x = 3$ and $x = 1$. But if $2 + x$ is negative, then it must equal -3 (since $|-3| = 3$) and so $2 + x = -3$ and $x = -5$.

So in the present case, in order to determine the possible solutions for x, it is necessary to solve for x under both possible conditions.

For the case where $x > 0$:

$x = 3x – 2$
$-2x = -2$
$x = 1$

For the case when $x < 0$:

$x = -1(3x – 2)$ We multiply by -1 to make x equal a negative quantity.
$x = 2 – 3x$
$4x = 2$
$x = 1/2$

Note however, that the second solution $x = 1/2$ contradicts the stipulation that $x < 0$, hence there is no solution for x where $x < 0$. Therefore, $x = 1$ is the only valid solution for (2).

The correct answer is B.

17.

(1) INSUFFICIENT: Since this equation contains two variables, we cannot determine the value of y. We can, however, note that the absolute value expression $|x^2 - 4|$ must be greater than or equal to 0. Therefore, $3|x^2 - 4|$ must be greater than or equal to 0, which in turn means that $y - 2$ must be greater than or equal to 0. If $y - 2 \geq 0$, then $y \geq 2$.

(2) INSUFFICIENT: To solve this equation for y, we must consider both the positive and negative values of the absolute value expression:

If $3 - y > 0$, then $3 - y = 11$
$y = -8$

If $3 - y < 0$, then $3 - y = -11$
$y = 14$

Since there are two possible values for y, this statement is insufficient.

(1) AND (2) SUFFICIENT: Statement (1) tells us that y is greater than or equal to 2, and statement (2) tells us that $y = -8$ or 14. Of the two possible values, only 14 is greater than or equal to 2. Therefore, the two statements together tell us that y must equal 14.

The correct answer is C.

18. Enough to buy doesn't mean any exact value ... the price can be anything ... so logically, E is the only answer possible.

19.
"one kilogram of a certain coffee blend consists of X kilogram of type I and Y kilogram of type II" means that X+Y=1
Combined C=6.5X+8.5Y, we get:
X=(8.5-C)/2, Y=(C-6.5)/2
Combined C≥7.3, X≤(8.5-C)/2≤1.2/2≤0.6
Answer is B

20.

It is somewhat tricky.
Usually, we need two equations to solve two variables.
For example, in this question, from 1, x+y=6, from 2, 21x+23y=130
Actually, the variables in such questions should be integers. Thus, hopefully, we can solve them with only one equation.
21x+23y=130, we try x=1, 2, 3, 4, 5..and find that only x=4, y=2 can fulfill the requirements. Answer is B.

21.

The figure can fulfill the entire requirement, but there is no any angle that equal to 60.
Sum of 4 angles = (n - 2) * 180 = 360
From 1: sum of the remaining angles are 360 - 2*90 = 180
From 2: either x + 2x = 180 => x = 60
Or x = 90/2 = 45 and y = 180 - 45 = 135.
Answer is E

22.

To find the area of equilateral triangle *ABC*, we need to find the length of one side. The area of an equilateral triangle can be found with just one side since there is a known ratio between the side and the height (using the 30: 60: 90 relationship). Alternatively, we can find the area of an equilateral triangle just knowing the length of its height.

Or we know that height of an equilateral triangle is given by $h = \frac{\sqrt{3}}{2}a$ and area of an equilateral triangle is given by $A = \frac{\sqrt{3}}{4}a^2$, where 'a' is the side of the triangle.

(1) INSUFFICIENT: This does not give us the length of a side or the height of the equilateral triangle since we don't have the coordinates of point *A*.

(2) SUFFICIENT: Since *C* has an *x*-coordinate of 6, the height of the equilateral triangle must be 6. We can determine the side and hence the area.

The correct answer is B.

23.
It seems that (1) and (2) combined are enough to solve this question: y could be only equal to 3 or -3 so n will be divisible by 9 ... and 9, 18, 27, 36, 45, 54, 63, 72, 81, 90 ... all have a sum of digits as 9 ... so we have a unique answer.
WRONG!!!
Imagine y = √3, √5, √7, 3, etc. So y^4 = 9 or 25 or 49 and y^2 = 3 or 5 or 7 or 9 ... so n may be divisible by 3 or 5 or 7 or 9 ... we are not sure what the sum of the digits of n will be ... suppose n = 21 or 25 ... we get different answers for the sum of digits as 3 or 7... Not sufficient. Answer E.

24.

(1) Any number of stamps could be purchased (5, 5), (10, 10), (100, 100) etc. INSUFFICIENT.
(2) The total value of the $0.15 stamps must be a dollar amount that ends in 5 or 0 (in the units cents position). In order for the total value of both stamps to equal $4.40, therefore, the total value of the $0.29 stamps must also be a dollar amount that ends in 5 or 0.

That would only occur if a multiple of 5 $0.29 stamps are purchased.

5 $0.29 stamps = $1.45, leaving $2.95 to make $4.40. But $2.95 is not a multiple of $0.15 -- no good.
10 $0.29 stamps = $2.90, leaving $1.50 to make $4.40. So 10 $0.15 would be purchased.
15 $0.29 stamps = $4.35, leaving $0.05 to make $4.40. Clearly not a multiple of $0.15 -- no good.

The only possibility is that 10 of each stamp are purchased. SUFFICIENT.

The correct answer is B.

25.
The best approach will be to test numbers. Note that since the question is Yes/No, all you need to do to prove insufficiency is to find one Yes and one No.
(1) INSUFFICIENT: Statement (1) says that $x < 10$, so first we'll consider $x = 2$.
$2! + (2 + 1) = 5$, which is prime.

Now consider $x = 3$.
$3! + (3 + 1) = 6 + (3 + 1) = 10$, which is not prime.

Since we found one value that says it's prime, and one that says it's not prime, statement (1) is NOT sufficient.

(2) INSUFFICIENT: Statement (2) says that x is even, so let's again consider $x = 2$:
$2! + (2 + 1) = 5$, which is prime.

Now consider $x = 8$:
$8! + (8 + 1) = (8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1) + 9$.
This expression must be divisible by 3, since both of its terms are divisible by 3. Therefore, it is not a prime number.

Since we found one case that gives a prime and one case that gives a non-prime, statement (2) is NOT sufficient.

(1) and (2) INSUFFICIENT: since the number 2 gives a prime, and the number 8 gives a non-prime, both statements taken together are still insufficient.

The correct answer is E.