

# NTI Packets

## Days 1 -5

## Geometry

Complete the corresponding pages for each NTI day. (Each page is titled NTI Day 1, Day 2 etc. Answers for the multiple choice should be completed on the scan-trons at the end of the packet. Days 1 -5 open ended work should be completed on the answer sheet at the end of the packet. The graphs needed for day 5 are on the back of the scan-tron sheet.

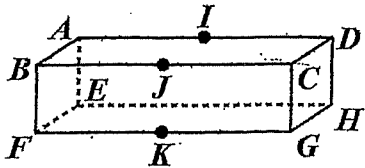
Each days work will be due no later than 3 days after we return to school. If a student is absent on the days we return to school, they still only have the 3 days from the return of school. If in an extreme situation where a student is out the first 3 days we return from a snow day then the work will be due the first day that they return to school.



Multiple Choice:

Geometry

1. Which of the following are noncollinear?



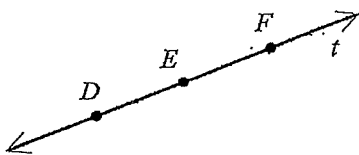
[A]  $\overline{FK}, G$

[B]  $D, C, G$

[C]  $B, J, C$

[D]  $D, I, A$

2. Which is an *incorrect* way to name the line?



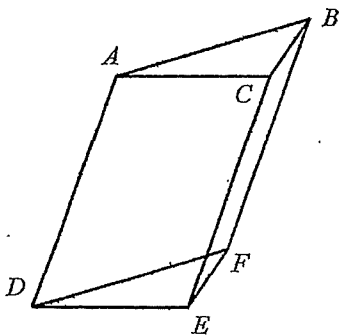
[A]  $\overleftrightarrow{DF}$

[B]  $\overleftrightarrow{FE}$

[C] line  $t$

[D]  $\overleftrightarrow{E}$

3. Name the plane represented by the right side of the figure.



[A]  $ABC$

[B]  $BCE$

[C]  $DAB$

[D]  $EDC$

4. If two planes intersect, then they intersect in exactly \_\_\_\_\_?

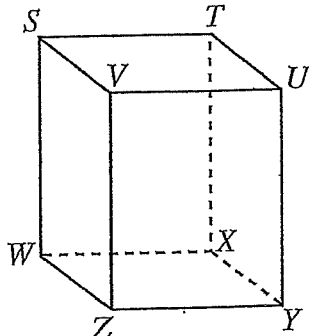
[A] two lines

[B] one plane

[C] one line

[D] one point

5. Refer to the figure below.



[A]  $Z$

[B]  $W$

[C]  $X$

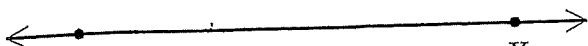
[D]  $V$

Which point is contained in plane  $TUY$ ?

[A]  $\overline{XY}$

[B]  $\overleftrightarrow{YX}$

6. Which of the following describes the figure below?

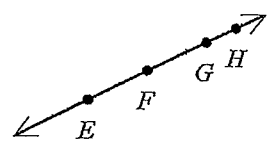


[C]  $\overleftrightarrow{XY}$

[D]  $\overline{XY}$

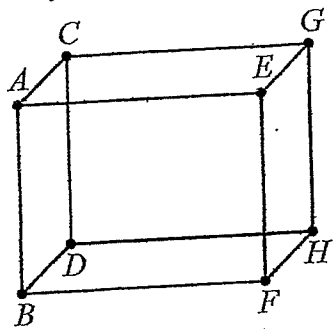
NTI  
Day 1

7. Identify the ray that is the opposite of  $\overrightarrow{GH}$ .



- [A]  $\overrightarrow{GE}$       [B]  $\overrightarrow{FH}$       [C]  $\overrightarrow{HG}$       [D]  $\overrightarrow{FG}$

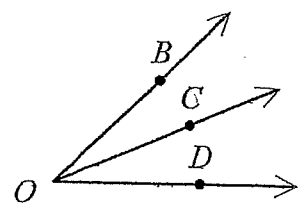
8. Identify the pair of lines that appear to be parallel.



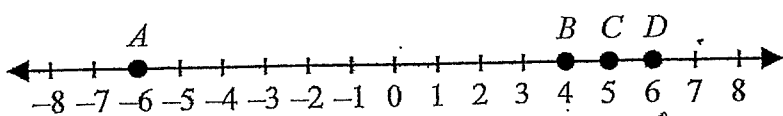
- [A]  $\overleftrightarrow{DH}$  and  $\overleftrightarrow{FE}$       [B]  $\overleftrightarrow{AC}$  and  $\overleftrightarrow{BF}$   
 [C]  $\overleftrightarrow{AC}$  and  $\overleftrightarrow{CG}$       [D]  $\overleftrightarrow{AB}$  and  $\overleftrightarrow{EF}$

Short Answers (Show work)

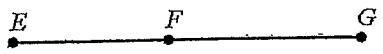
9. If  $m\angle BOD = 46^\circ$  and  $m\angle COD = 24^\circ$ , then what is the measure of  $\angle BOC$ ?



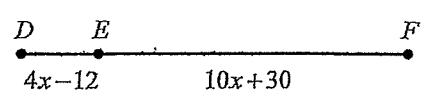
10. Find AC and BD.



11. a. If  $EF = 7u + 10$ ,  $FG = 5u + 14$ , and  $EG = 36$ , find the value of  $u$ .  
 b. Find  $EF$  and  $FG$ .

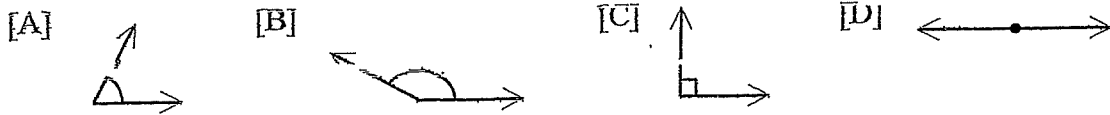


12. If  $DF = 200$ , then find the value of  $x$ . Then find  $DE$  and  $DF$ .



Multiple Choice

1. Which of the following is a straight angle?



2. A highway map of Ohio has a coordinate grid superimposed on top of the state. Cincinnati is at point  $(-3, 0)$  and Dayton is at point  $(5, 5)$ . The Cincinnati R.O.T.C. group is going to Dayton to see Wright Patterson Air Force Base. The map shows a highway rest area halfway between the cities. What are the coordinates of the rest area? What is the distance between Cincinnati and Dayton? (one unit = 5.30 miles)

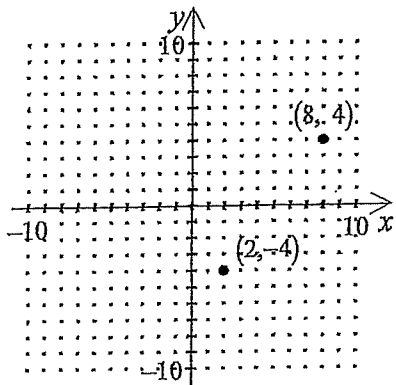
[A] Rest area =  $(4, \frac{5}{2})$   
Dayton = 24 miles

[B] Rest area =  $(-4, -\frac{5}{2})$   
Dayton = 29 miles

[C] Rest area =  $(\frac{5}{2}, 1)$   
Dayton = 33 miles

[D] Rest area =  $(1, \frac{5}{2})$   
Dayton = 50 miles

3. Noam walks home  $(8, 4)$  from school  $(2, -4)$  by walking 8 blocks north, then 6 blocks east. How much shorter would his walk be if there were a direct path from the school to his house?



[A] 10 blocks      [B] 14 blocks

[C] 4 blocks      [D] The distance would be the same.

4. Find the coordinates of the midpoint of the segment connecting  $H(5, -5)$  and  $K(-11, 11)$ .

[A]  $(8, 8)$       [B]  $(-6, 6)$       [C]  $(-3, 3)$       [D]  $(16, 16)$

5. Find the coordinates of the midpoint of the segment connecting  $P(4, -2)$  and  $Q(-7, 1)$ .

[A]  $(\frac{11}{2}, -\frac{3}{2})$       [B]  $(-3, -1)$       [C]  $(11, -3)$       [D]  $(-\frac{3}{2}, -\frac{1}{2})$

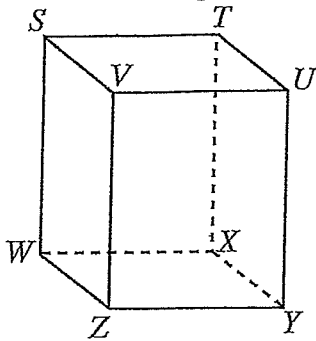
6.  $M(-5, 2)$  is the midpoint of  $\overline{RS}$ . If  $S$  has coordinates  $(2, 6)$ , find the coordinates of  $R$ .

[A]  $(-12, -2)$       [B]  $(9, 10)$       [C]  $(9, -2)$       [D]  $(-12, 10)$

# Short Answers (show your work)

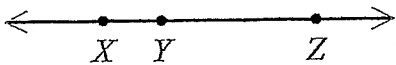
NTI Day 2

Refer to the figure below.

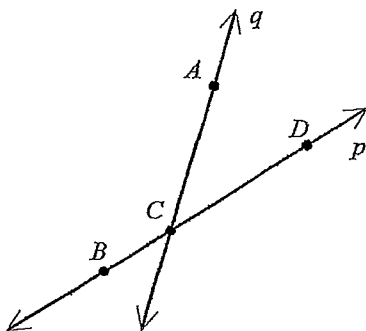


7. What is the intersection of plane  $STUV$  and plane  $VUYZ$ ?
8. Find the plane containing the first three points listed, then decide whether the fourth point is in that plane. Write *coplanar* or *noncoplanar* to describe the points.
  - a.  $S, W, X, T$
  - b.  $X, U, Y, Z$
9. Give a real-life example of the intersection of two planes.
10. Use *always*, *sometimes*, or *never* to make a true statement.
  - a. Two lines are ? coplanar.
  - b. Two points are ? collinear.

11. Name all rays shown.



12. Name line  $p$  in three other ways.

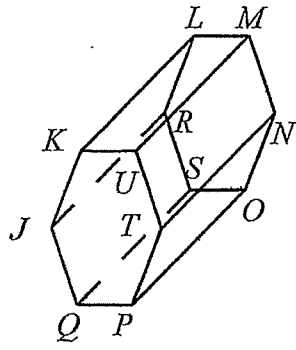




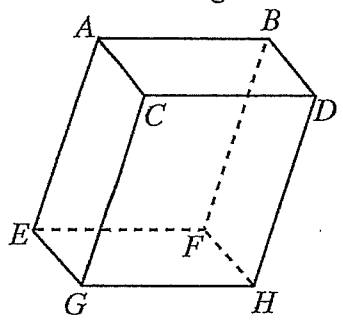
## Review for Unit 1

### Short answers (show your work) **Geometry**

11. Name a pair of parallel planes.

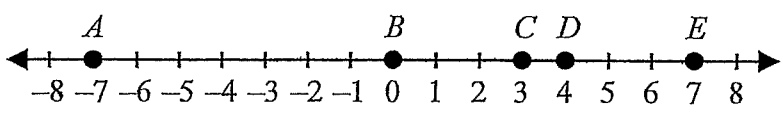


12. Refer to the diagram below.



Name all segments shown that are skew to segment  $\overline{GC}$ .

13. Which of these points, if any, is the midpoint of  $\overline{AE}$ ?





# Review Transformations

Day 4

1. In  $\triangle DEF$   $D(-3,4)$   $E(-2,5)$   $F(2,1)$  Find the image of  $F$  if the triangle is reflected over the  $y$ -axis.

- A.  $(2,-1)$     B.  $(-2,1)$     C.  $(1,2)$     D.  $(-1,-2)$

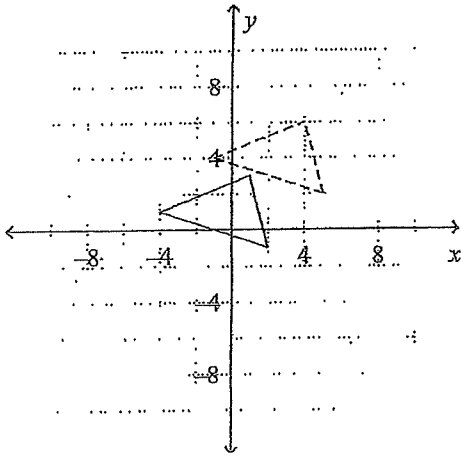
2. In  $\triangle MNP$   $M(-1,4)$   $N(0,-2)$   $P(3,4)$  Find the image of  $M$  if the triangle is reflected over  $y = -x$ .

- A.  $(-1,-4)$     B.  $(1,4)$     C.  $(4,-1)$     D.  $(-4,1)$

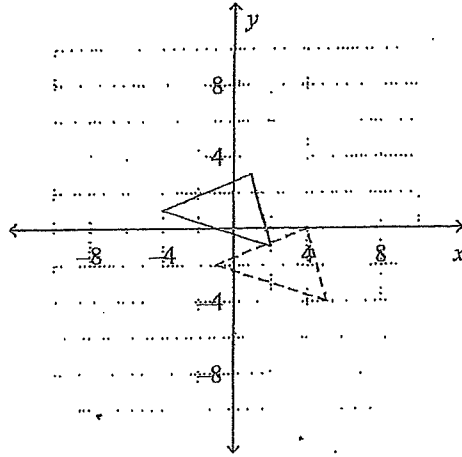
3.

Which translation from solid-lined figure to dashed-lined figure is given by the vector  $\langle -3, 3 \rangle$ ?

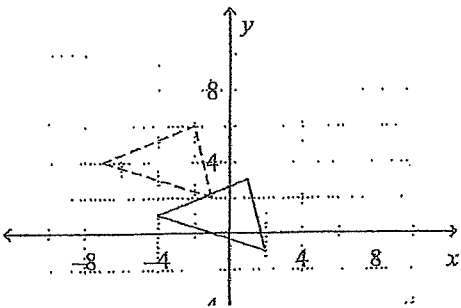
a.



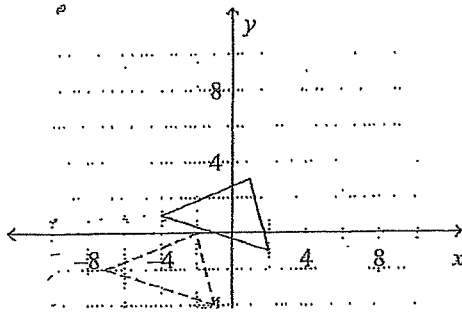
c.



b.




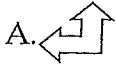



d.





8. Which of the following is preserved in a translations
- distance
  - angle measures
  - orientation
  - all of the above
9. Write a rule for the description : move right 2 and up 6
- $(x,y) \rightarrow (x-2,y-6)$
  - $(x,y) \rightarrow (x+2,y-6)$
  - $(x,y) \rightarrow (x+2,y+6)$
  - $(x,y) \rightarrow (x-2,y+6)$
10.  $\triangle ABC$  is reflected over a line so that  $A(-8,5)$  has an image of  $(-5,8)$  name the line that the triangle is reflected over.
- x-axis
  - y-axis
  - $y = x$
  - $y = -x$
11. Which describes an isometry
- A reflection where the orientation stays the same.
  - A transformation where the distance between the mirror line and a point is equal to the distance between the mirror line and the image.
  - After a transformation the objects will remain congruent
  - An object is rotated around the origin.
12. Take the point  $H(-6,2)$  over the line  $x = 2$  and then take that point and Reflect it over the x-axis. Give the coordinates of the final point.
- $(10,-2)$
  - $(-6,-2)$
  - $(2,-2)$
  - $(-2,6)$
13. Which of the following is not true?
- A reflection preserves orientation
  - A translation preserves orientation
  - A reflection preserves distance
  - A reflection preserves angle measures.

Multiple choice

1. Which is a translation of 
- A.  B.  C.  D. 
2. Write a description for  $(x,y) \rightarrow (x + 4, y - 3)$
- A. Move up 4 and right 3  
 B. Move right 4 and down 3  
 C. Move left 4 and up 3  
 D. Move left 3 and down 4
3. Reflect  $\triangle MNO$  over the  $x$ -axis.  $M(-4,5)$   $N(2,6)$  and  $O(-1,-6)$  Find the image of  $N$ .
- A.  $(-2,6)$  B.  $(2,-6)$  C.  $(6,2)$  D.  $(-6,-2)$
4. Which letter looks the same after a reflection over a horizontal line.
- A. K B. R C. H D. T

Use the graph paper provided to graph each (4 points each)

5. Graph  $\triangle XYZ$  where  $X(-2,-4)$   $Y(1,3)$   $Z(5,2)$  then reflect the triangle over  $y = 3$
6. Graph  $\triangle XYZ$  where  $X(-2,-4)$   $Y(1,3)$   $Z(5,2)$  then reflect the triangle over  $y = -x$
7. Graph  $\triangle XYZ$  where  $X(-2,-4)$   $Y(1,3)$   $Z(5,2)$  then translate the triangle using the rule  $(x,y) \rightarrow (x - 3, y + 1)$
8. Graph  $\triangle XYZ$  where  $X(-2,-4)$   $Y(1,3)$   $Z(5,2)$  then translate the triangle using  $\langle -5, 2 \rangle$  (use matrices to show how to get the image of each point)

Name	Day 1		
Date		Period	

1	A B C D E	11	A B C D E
2	○ ○ ○ ○ ○	12	○ ○ ○ ○ ○
3	○ ○ ○ ○ ○	13	○ ○ ○ ○ ○
4	○ ○ ○ ○ ○	14	○ ○ ○ ○ ○
5	○ ○ ○ ○ ○	15	○ ○ ○ ○ ○
6	○ ○ ○ ○ ○	16	○ ○ ○ ○ ○
7	○ ○ ○ ○ ○	17	○ ○ ○ ○ ○
8	○ ○ ○ ○ ○	18	○ ○ ○ ○ ○
9	○ ○ ○ ○ ○	19	○ ○ ○ ○ ○
10	○ ○ ○ ○ ○	20	○ ○ ○ ○ ○

Test Version: A ○ B ○ C ○ D ○

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Name	Day 2	
Date		Period

1	A B C D E	11	A B C D E
2	○ ○ ○ ○ ○	12	○ ○ ○ ○ ○
3	○ ○ ○ ○ ○	13	○ ○ ○ ○ ○
4	○ ○ ○ ○ ○	14	○ ○ ○ ○ ○
5	○ ○ ○ ○ ○	15	○ ○ ○ ○ ○
6	○ ○ ○ ○ ○	16	○ ○ ○ ○ ○
7	○ ○ ○ ○ ○	17	○ ○ ○ ○ ○
8	○ ○ ○ ○ ○	18	○ ○ ○ ○ ○
9	○ ○ ○ ○ ○	19	○ ○ ○ ○ ○
10	○ ○ ○ ○ ○	20	○ ○ ○ ○ ○

Test Version: A ○ B ○ C ○ D ○

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Name	Day 3		
Date		Period	

1	A B C D E	11	A B C D E
2	○ ○ ○ ○ ○	12	○ ○ ○ ○ ○
3	○ ○ ○ ○ ○	13	○ ○ ○ ○ ○
4	○ ○ ○ ○ ○	14	○ ○ ○ ○ ○
5	○ ○ ○ ○ ○	15	○ ○ ○ ○ ○
6	○ ○ ○ ○ ○	16	○ ○ ○ ○ ○
7	○ ○ ○ ○ ○	17	○ ○ ○ ○ ○
8	○ ○ ○ ○ ○	18	○ ○ ○ ○ ○
9	○ ○ ○ ○ ○	19	○ ○ ○ ○ ○
10	○ ○ ○ ○ ○	20	○ ○ ○ ○ ○

Test Version: A ○ B ○ C ○ D ○

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Name	Day 4	
Date		Period

1	A B C D E	11	A B C D E
2	○ ○ ○ ○ ○	12	○ ○ ○ ○ ○
3	○ ○ ○ ○ ○	13	○ ○ ○ ○ ○
4	○ ○ ○ ○ ○	14	○ ○ ○ ○ ○
5	○ ○ ○ ○ ○	15	○ ○ ○ ○ ○
6	○ ○ ○ ○ ○	16	○ ○ ○ ○ ○
7	○ ○ ○ ○ ○	17	○ ○ ○ ○ ○
8	○ ○ ○ ○ ○	18	○ ○ ○ ○ ○
9	○ ○ ○ ○ ○	19	○ ○ ○ ○ ○
10	○ ○ ○ ○ ○	20	○ ○ ○ ○ ○

Test Version: A ○ B ○ C ○ D ○

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Name	Dany 5	
Date		Period

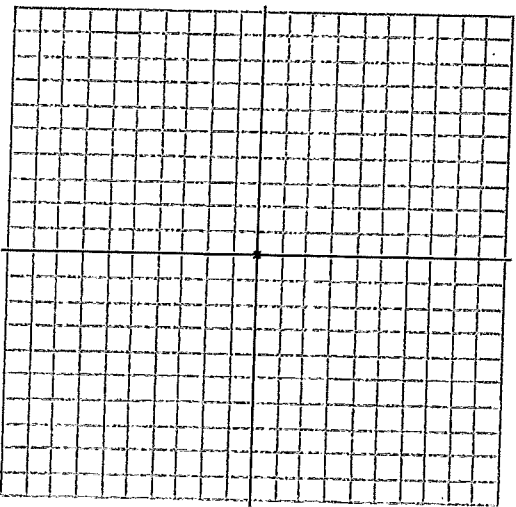
A	B	C	D	E	A	B	C	D	E
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2	○	○	○	○	2	○	○	○	○
3	○	○	○	○	3	○	○	○	○
4	○	○	○	○	4	○	○	○	○
5	○	○	○	○	5	○	○	○	○
6	○	○	○	○	6	○	○	○	○
7	○	○	○	○	7	○	○	○	○
8	○	○	○	○	8	○	○	○	○
9	○	○	○	○	9	○	○	○	○
10	○	○	○	○	10	○	○	○	○

Test Version: A ○ B ○ C ○ D ○

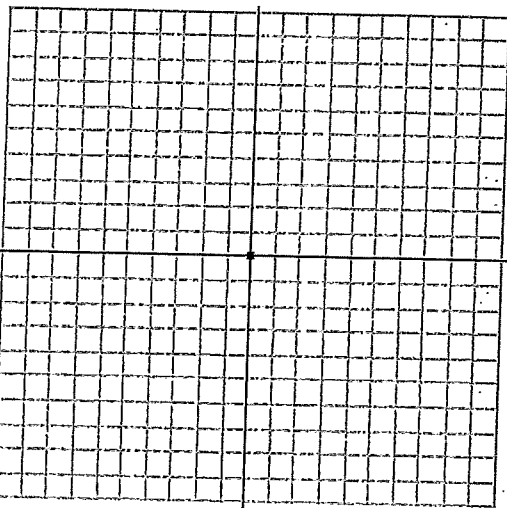
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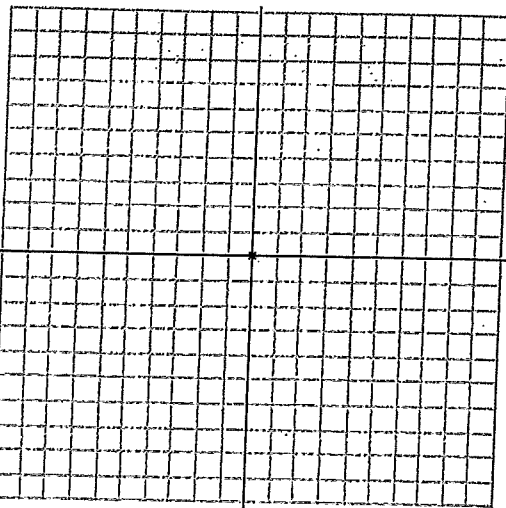
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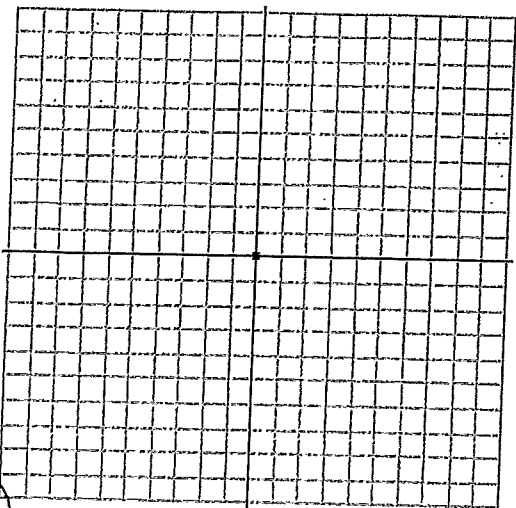
7



6



8



NTI Days

Short Answers:

Day 1

9). 10).

11). 12)

Day 2

7). 8).

9). 10).

11). 12).

Day 3

11). 12). 13).

