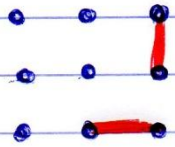
Stage 3 *

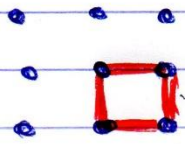
Completing Quadrilaterals

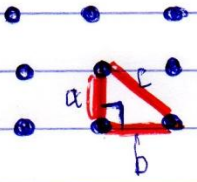
Zach Thompson

1) Draw the biggest quad possible.

2) Calculate area, use Pythagoras' theorem.





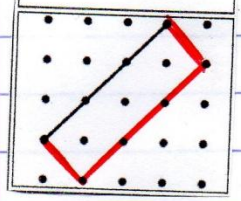


$a^2 + b^2 = c^2$

$1^2 + 1^2 = c^2$

$c = \sqrt{2}$

1 Rectangle

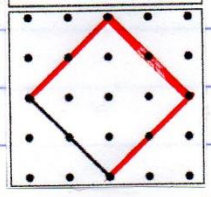


Area = length x width

$= 3(\sqrt{2}) \times \sqrt{2}$

$= 6$ units^2

2 Square

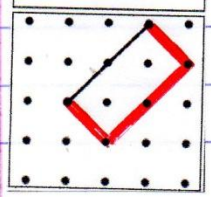


Area = length^2

$= (2\sqrt{2})^2$

$= 2^3$ or 8 units^2

3 Rectangle

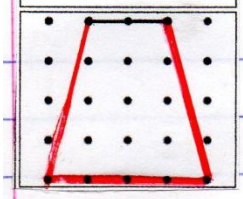


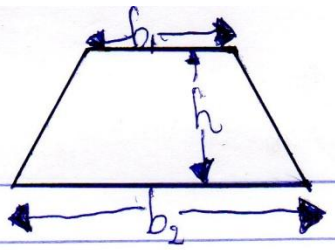
Area = $l \times w$

$= 2\sqrt{2} \times \sqrt{2}$

$= 4$ units^2

4 Isosceles Trapezium



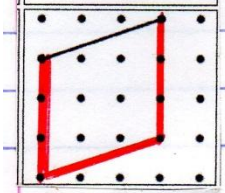


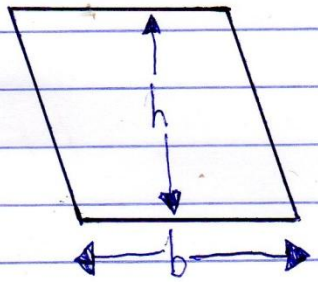
$$\text{Area} = \frac{h(b_1+b_2)}{2}$$

$$= \frac{4(2+4)}{2}$$

$$= 12 \text{ units}^2$$

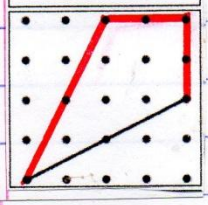
5 Parallelogram

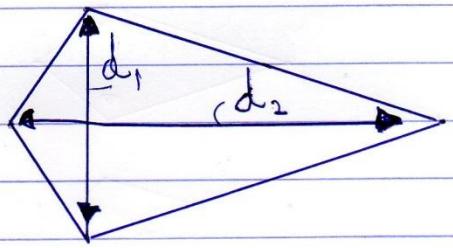




$$\text{Area} = bh$$
$$= 3 \times 3$$
$$= 9 \text{ units}^2$$

6 Kite



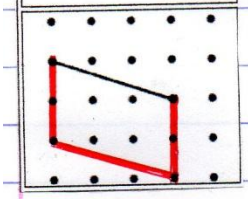


$$\text{Area} = \frac{d_1 d_2}{2}$$

$$= \frac{4\sqrt{2} \times 2\sqrt{2}}{2}$$

$$= 8 \text{ units}^2$$

7 Parallelogram

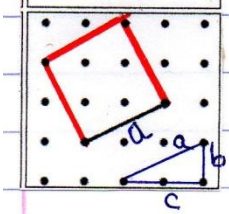


$$\text{Area} = bh \quad \text{(as (5))}$$

$$= 3 \times 2$$

$$= 6 \text{ units}^2$$

8 Square



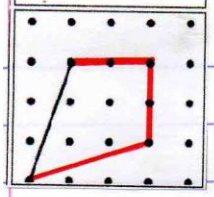
$$\text{Area} = \text{length}^2$$

$$= (\sqrt{5})^2$$

$$= 5 \text{ units}^2$$

$$a^2 = b^2 + c^2$$
$$= 1 + 4$$
$$a = \sqrt{5}$$

9 Kite

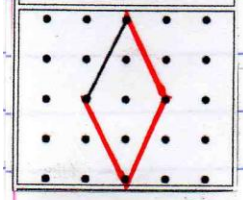


$$\text{Area} = \frac{d_1 d_2}{2} \quad (\text{as } 6)$$

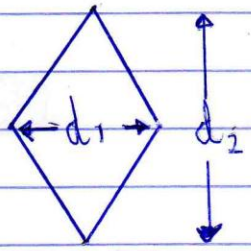
$$= \frac{2\sqrt{2} \times 3\sqrt{2}}{2}$$

$$= 6 \text{ units}^2$$

10 Rhombus



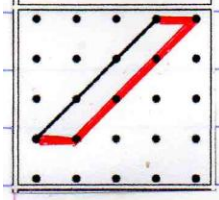
$$\text{Area} = \frac{d_1 d_2}{2}$$



$$= \frac{2 \times 4}{2}$$

$$= 4 \text{ units}^2$$

11 Parallelogram

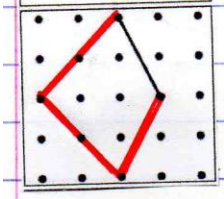


$$\text{Area} = bh \quad (\text{as } 5)$$

$$= 3 \times 1$$

$$= 3 \text{ units}^2$$

12 Kite

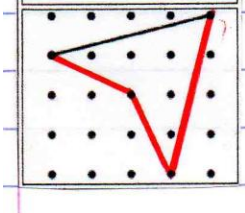


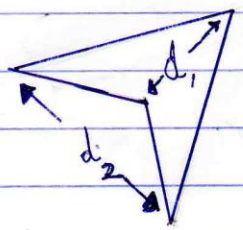
$$\text{Area} = \frac{d_1 d_2}{2} \quad (\text{as } 6)$$

$$= \frac{4 \times 3}{2}$$

$$= 6 \text{ units}^2$$

13 Arrowhead



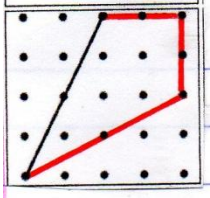


$$\text{Area} = \frac{d_1 d_2}{2}$$

$$= \frac{2\sqrt{2} \times 3\sqrt{2}}{2}$$

$$= 6 \text{ units}^2$$

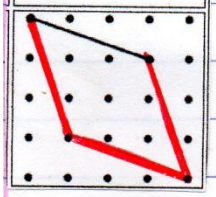
14 Kite



Congruent to (6)

Area = 8 units^2

15 Rhombus

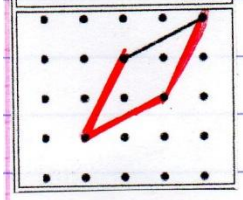


Area $= \frac{d_1 d_2}{2}$ (as (10))

$= \frac{4\sqrt{2} \times 2\sqrt{2}}{2}$

$= 8$ units^2

16 Rhombus

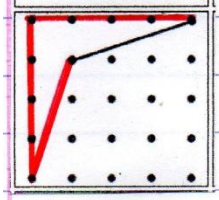


Area $= \frac{d_1 d_2}{2}$ (as 10)

$= \frac{\sqrt{2} \times 3\sqrt{2}}{2}$

$= 3$ units^2

17 Arrowhead

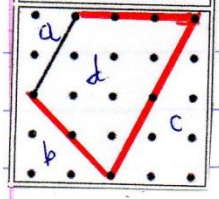


Area $= \frac{d_1 d_2}{2}$ (as 13)

$= \frac{\sqrt{2} \times 4\sqrt{2}}{2}$

$= 4$ units^2

18 Trapezium



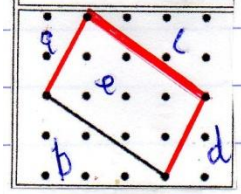
Area $= 16 - (a + b + c)$

$= 16 - 7$

$= 9$ units^2

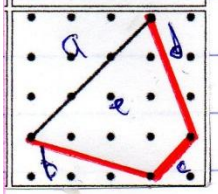
4 × 4 grid = 16 units^2

19 Parallelogram



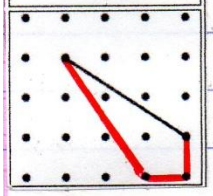
$$\text{Area} = 16 - (a+b+c+d)$$
$$= 16 - 8$$
$$= 8 \text{ units}^2$$

20 Isoceles Trapezium



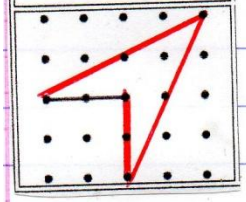
$$\text{Area} = 16 - (a+b+c+d)$$
$$= 16 - 8$$
$$= 8 \text{ units}^2$$

21 Kite



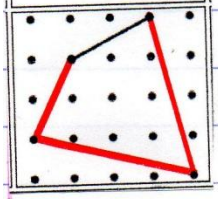
$$\text{Area} = \frac{d_1 d_2}{2} \quad \text{(as (6))}$$
$$= \frac{\sqrt{2} \times 3\sqrt{2}}{2}$$
$$= 3 \text{ units}^2$$

22 Arrowhead



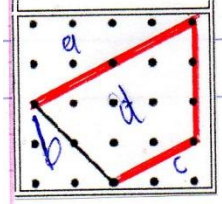
$$\text{Area} = \frac{d_1 d_2}{2} \quad \text{(as 13)}$$
$$= \frac{2\sqrt{2} \times 2\sqrt{2}}{2}$$
$$= 4 \text{ units}^2$$

23 Kite



$$\text{Area} = \frac{d_1 d_2}{2} \quad \text{(as 6)}$$
$$= \frac{3\sqrt{2} \times 3\sqrt{2}}{2}$$
$$= 9 \text{ units}^2$$

24 Trapezium



$$\text{Area} = 16 - (a+b+c)$$
$$= 16 - 7$$
$$= 9 \text{ units}^2$$