Year 7
Answers

Mathematics

Term 1
Units 1 – 10

Mathematics

LESSON ANSWERS

TERM 1

UNIT 1 10

YEAR 7

UNIT 1

1. 19.5
2. $672
3. 23, 24, 25, 26, 27, 28
4. 1.9
5. 72
6. **a**. 7.9
b. 9
7. 19.8
8. 10.9 (1 dp)
9. **a.** 18
b. 5
c. 15
d. 16.5
e. 12
f. 39
g. 32
h. 23
i. 4.45
j. 8.145
10. **a**. 8^{th}
b. 17^{th}
c. 62^{nd}
11. **a.** 8^{th} & 9^{th}
b. 15^{th} & 16^{th}
c. 75^{th} & 76^{th}
12. **a**. 37
b. 131
13. 55
14. **a**. 9
b. 18
c. 5, 9
d. 4
e. -
f. 11, 15, 16
15. **a.** 35
b. 86
c. 444
d. 1.45
e. 18
f. 83
16. Mean
17. **a.** 87
b. 52
c. 22
d. 9
18. **a.** Median: 34
Mode: 34
Range: 5
b. Median: 84
Mode: 84
Range: 10
c. Median: 12
Mode: 12
Range: 4
d. Median: 3
Mode: 3 & 4
Range: 5
e. Median: 37
Mode: 57
Range: 46
f. Median: 127
Mode: 117
Range: 48
19. 25.6 (1dp)
20. 78%
21. 1.79m
22. 95
23. 4.61 (2dp)
24. **a.** Range
b. Mean
c. Mode
d. Mode
e. Median
f. Mean
g. Mean
h. Mean
25. **a.** Mean: 32.5 Median: 32 Modal: 28
b. Mean
c. No, because the mean is higher
26. **a.** Northern Suburbs
b. Because you couldn't find the mean or median of names of places.
27a. 12
b. 12
c. Modal, so the shop would be able to order more stock for the more popular dress sizes

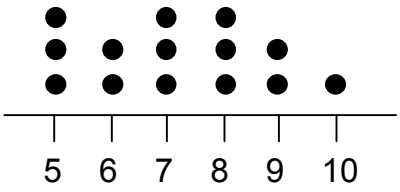
UNIT 2

1. a. No
b. There may be more cereals that are not mentioned in the survey
c. Out of all the breakfast cereals, which do you like best?

2. a. On the first case, the responder is forced to say yes as it follows along with the logic, while the second case forces the responder to say no to avoid seeming cruel.
b. How often to you eat meat?
Do you prefer meat or vegetables?
Do you like eating meat?

3. A: Gives more option and freedom to express your opinion
B: Easier and faster to complete the survey

4.



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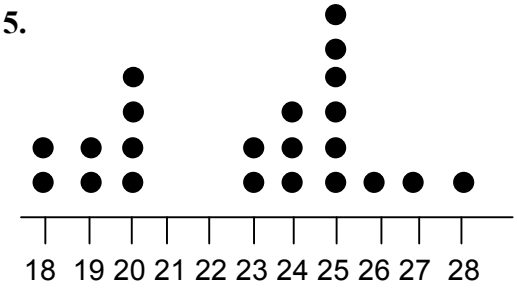


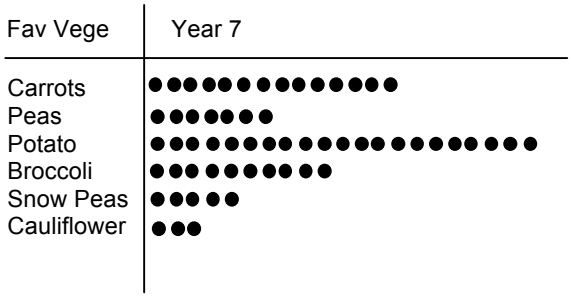
6. a. 22
b. 17
c. 64
d. 13
e. 42
f. 0

7.

Stem	Leaf
11	1 4 9
12	2 3 5 8 9 9
13	3 3 5 8
14	4 8
15	5 7 8
16	0 9

8. a. no correlation
b. positive correlation
c. negative correlation
d. no correlation
e. negative correlation
f. positive correlation

9. a. carrots
b. potato
c.



10. a.

Stem	Leaf
2	1 6 9
3	1 2 5 5 6 6
4	2 3 3 3 4 5 7 8
5	0 2 4

b. 54
c. 7
d. $\frac{2}{5}$

11. a. 65
b. 14
c. 34
d. 54
e. 9
f. 13
g. Male: 38 Female: 43
h. i. 33%
ii. 22.5%
iii. 41%
iv. 60%
v. There are older females in comparison to the males suggesting that males are unhealthier as they are admitted into hospital younger

12. a. $1.6 million
b. 21
c. 7
d. They had an injury and were unable to participate in some competitions
e. This graph is a positive correlation graph
f. The higher the ranking, the more money is earned

13. a. The more hours of training, the higher the fitness level
b. Maths marks has no relationship with shoe sizes
c. There is no correlation between the house number and the height of the house
d. The more alcohol consumed, your ability to drive becomes worse

14. a. positive- the older the tree, the taller they grow
b. no correlation
c. negative- drugs affect driving efficiency- the more efficient, the less drug usage
d. positive- the more study done the better the HSC mark
e. positive- understanding the physical principles of motion will improve driving efficiency.
f. curved (positive & negative)- people improve their running speed to a level until their fitness begins to deteriorate

15. a.

Stem	Leaf
6	3 6 8 9
7	0 0 1 2 4 4 8 9
8	3 3 5 5 7 8
9	0 1 1 5 7 7

b. There will be too many numbers for the dot plot
c. It is easier to graph and sort the numbers in groups of 10
d. What is 4 greater than the median of the set of scores.

UNIT 3

1
a. 40, 45, 50
b. 282, 264, 246
c. 128, 64, 32
d. 38, 76, 152
e. 18, 108, 648
f. 400, 80, 16
g. 12, 42, 132
h. 18, 40, 84
i. 4, 16, 256
j. 5, 26, 677

2
a. 29, +8
b. 63, -7
c. 135, ×3
d. 5, ÷5
e. 20000, ×10
f. 31, +10
g. 0.002, ÷10
h. 850, -50
i. 1000000, ×100
j. 128, ÷2

3
a. 50, 59, 68
b. 75, 67, 59
c. 48, 96, 192
d. 2662, 29282, 322102
e. 36, 49, 64
f. 125, 216, 343
g. 63, 127, 255
h. 25, 31, 38
i. 26, 35, 46
j. 203, 608, 1823

4
a. 17
b. 25, 32
c. 96
d. 21, 63
e. 87, 79
f. 36
g. 64, 256
h. 40, 8
i. 1.11
j. 118, 168

5
a. +2, 10
b. +3, 12
c. +3, 13
d. +4, 15
e. +4, 16
f. +5, 21

6. 14, 30
7. 24, 40
8. 18, 28
9. 7, 13

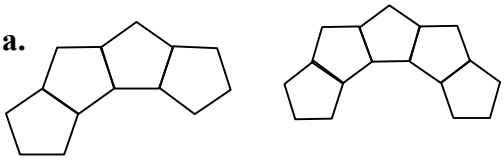
10a. no. of matches used = 4×no. of squares
b. 4, 8, 12, 16, 20, 24, 28, 32, 36, 40
c. 400

11a. 3
b. no. of matches used = 3 × no. of squares + 1
c. 4, 7, 10, 13, 16, 19, 22, 25, 28, 31
d. 601

12a. Bottom number is 6 times top number.
b. Bottom number is top number +12
c. Bottom number is 2 times top number minus 1
d. Bottom number is 10 times top number minus 1
e. Bottom number is 2 times top number plus 2
f. Bottom number is square of top number.
g. Bottom number is 9 times top number.
h. Bottom number is top number squared minus 1.

13. a. The number of toothpicks used is 5 times the figure number plus 2.
b i. 102
ii. 252
iii. 507

14. a.



b. The number of toothpicks used is the number of pentagons times 4 plus 1
c. i. 29 **ii.** 41 **iii.** 61
d. 23

15. a. $y = 2x + 1$
b. $n = p + 4$
c. $t = 3s + 2$
d. $A = \frac{1}{2} b \times h$
e. $T = \frac{1}{2}(n + 4)$

16
a. 15, 16, 17, 18
b. 8, 12, 16, 20
c. 14, 29, 44, 59
d. 28, 32, 36, 40
e. 0, 10, 20, 30
f. 4, 6, 8, 10
g. 4, 29, 85, 173
h. 40, 72, 112, 160
i. 4, 19, 58, 133

17

a. 40	**b.** 37	**c.** 9
d. 7	**e.** 88	**f.** 60
g. 100	**h.** 73	**i.** 0
j. 6	**k.**7	**l.** 25

18. $S = 3 \times t + 2$, 92

19. $t = (5 \times f) + 1$, 251 toothpicks

UNIT 4

1. a. line
b. point
c. plane
d. plane
e. plane
f. point
g. line
h. plane

2. a. 18, 8
b. 8, 5
c. 17, 9
d. 21, 9

3. a. $\overleftrightarrow{AB}, \overleftrightarrow{BC}, \overleftrightarrow{AC}$
b. $\overline{AB}, \overline{BC}, \overline{AC}$

4 (answers may vary)
a. i. Points A,B,C
ii. points A, C, D
iii. $\overleftrightarrow{AD}$ and $\overleftrightarrow{CD}$, $\overleftrightarrow{AD}$ and $\overleftrightarrow{AC}$, $\overleftrightarrow{AC}$ and $\overleftrightarrow{CD}$

b. i. False
ii. False
iii. False
iv. False
v. False

5 a. X, $\angle$ZXY, $\angle$X, $\angle$YXZ
b. E, $\angle$E, $\angle$HER, $\angle$REH
c. C, $\angle$C, $\angle$SCT, $\angle$TCS
d. W, $\angle$W, $\angle$AWR, $\angle$RWA

6 a. $\angle$B or $\angle$ABC
b. $\angle$POR, $\angle$POS, $\angle$QOS
c. $\angle$ A, $\angle$ B, $\angle$ C or $\angle$ BAC, $\angle$ ABC, $\angle$ACB
d. $\angle$PQT, $\angle$QPS, $\angle$PSR, $\angle$QRS
e. $\angle$COD, $\angle$BOA, $\angle$DOE
f. $\angle$HEF, $\angle$IHF, $\angle$IGF, $\angle$IGJ

7 a. reflex
b. right
c. acute
d. reflex
e. acute
f. obtuse
g. straight
h. right

8 a. acute: $\angle$Q, $\angle$R
Obtuse: $\angle$P
b. acute: $\angle$S

Right: ∠R
Obtuse ∠P, ∠Q,

c. acute: ∠A, ∠C
Right: ∠B,

d. acute: ∠Y, ∠Z
Obtuse: ∠W, ∠X

9 a. 90° **b.** 60°
c. 330° **d.** 280°

10 a. acute **b.** obtuse
c. acute **d.** reflex
e. straight **f.** obtuse
g. right **h.** revolution

11 a. straight **b.** obtuse
c. acute

12 a. 40° **b.** 140°
c. 60° **d.** 140°

13 a. ≈140° **b.** ≈82°
c. ≈27° **d.** ≈92°

14. x - ∠AHB
y - ∠BHC
z - ∠CHD
p - ∠AHC
q - ∠BHD
r - ∠AHD

15a. PQT
b. SPT
c. ∠g
d. QRT
e. QTP
f. ∠w

16a. 90°
b. 150°
c. 45°
d. 105°

UNIT 5

1. c

2. a. 45°
b. 35°
c. 12°
d. 69°
e. 1°

3. a. 135°
b. 40°
c. 82°
d. 105°
e. 47°

4. a. ∠DCE
b. ∠BCE
c. ∠DCB, ∠ACE
d. ∠ACB & ∠BCE, ∠ACD & ∠ECD
∠BCE &∠ECD, ∠ACD & ∠ACB

5. a. ∠FEG, ∠GEH
b. ∠FEG, ∠GEH
c. add up to 90°

6. a. 22° **b.** 27°
c. 71° **d.** 122°
e. 32.5° **f.** 24°
g. 115° **h.** 145°
i. 107° **j.** 108°
k. x = 52°, d = 83°
l. a = 57°, b = 76°

7. a. none
b. alternate exterior
c. alternate interior
d. co- interior
e. alternate exterior
f. corresponding
g. corresponding

8. a. 73° **b.** 107°
c. 73° **d.** 107°
e. 86° **f.** 94°
g. 86° **h.** 86°
i. 94° **j.** 73°
k. 107° **l.** 73°
m. 94° **n.** 94°

9. a. a = 40° (vertically opposite angles are equal)
b = 40° (alternate angles are equal)
b. a = 60° (angles on a straight line are supplementary)
b = 120 ° (alternate exterior angles are equal)
c. a = 100° (vertically opposite angles are equal)
b = 80° (co- interior angles add up to 180°)
d. a = 72° (alternate angles are equal)
b = 72° (corresponding angles are equal)
e. a = 35° (vertically opposite angles are equal)
b = 145° (co- interior angles add up to 180°)
f. a = 90° (angles on a straight line are supplementary)
b = 90° (co- interior angles add up to 180°)

10. x, z, p = 60°
q, r, s = 120°

11. a. yes, alternate exterior angles are equal.
b. yes, alternate angles are equal.
c. yes, co- interior angles are add up to 180°
d. no, alternate angles are not equal.
e. yes, corresponding angles are equal.
f. yes, co- interior angles are add up to 180°

12. (reasons may vary)
a. d = 55° (angles on a straight line are supplementary)
c = 125° (alternate angles are equal.)
b. x = 130° (co- interior angles are add up to 180°)
y = 50° (vertically opposite angles are equal)
c. w = 150° (co- interior angles add up to 180°)
d. x = 61° (71°-angles on a straight line are supplementary,
48°- corresponding angles are equal,
61°- angle sum of triangle is 180°)
e. c = 105° (angles on a straight line are supplementary, vertically opposite angles are equal, angle sum of triangle is 180°, corresponding angles are equal)
f. n = 58° (alternate interior angles are equal, angles on a straight line are supplementary)

g. m = 51° (alternate exterior angles are equal)
h. c =62° (alternate angles are equal)
d =62° (alternate angles are equal)
i. n = 85° (alternate angles are equal, angle sum of triangle is 180°, angles on a straight line are supplementary)

13. Yes, because both AB and EF are parallel to CD.

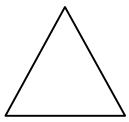
14. a = 70°
b = 70°
c = 70°
d = 70°

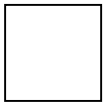
UNIT 6

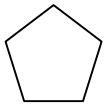
1. b, d, e

2. a, b, d, f

3. a. hexagon
b. octagon
c. octagon
d. hexagon
e. octagon
f. nonagon
g. heptagon
h. dodecagon

4a. 

b. 

c. 

d. and e. 

f. 

5. Triangle: 3, 3, 0
Quadrilateral: 4, 4, 2
Pentagon: 5, 5, 5
Hexagon: 6, 6, 9
Heptagon: 7, 7, 14
Octagon: 8, 8, 20
Nonagon: 9, 9, 27
Decagon: 10, 10, 35

6. a. acute- angled equilateral
b. right- angled scalene
c. acute - angled isosceles
d. obtuse - angled isosceles

7. a. Yes
b. No
c. No
d. Yes
e. No
f. Yes

8. a. 36°
b. 30°
c. 42°
d. 83°
e. 52°
f. 23°

9.

	ΔABC	ΔDEF	ΔGHI	ΔJKL	ΔMNO	ΔPQR	ΔSTU
E						√	
I			√		√	√	√
S	√	√		√			
A				√	√	√	
R		√					√
O		√	√				

10.

Parallel-ogram	***Rhombus***	***Rectangle***	***Square***	***Kite***
Yes	Yes	Yes	Yes	No
Yes	Yes	Yes	Yes	No
Yes	Yes	Yes	Yes	No
Yes	Yes	Yes	Yes	No
No	No	Yes	Yes	No
No	No	Yes	Yes	No
No	No	Yes	Yes	No
No	Yes	No	Yes	No
No	Yes	No	Yes	Yes
No	Yes	No	Yes	Yes
Yes	Yes	Yes	Yes	No

11. a. True
b. False
c. False
d. True
e. True
f. True
g. True
h. True
i. True
j. False

12. a. a = 65
b = 50
b. a = 58
b = 58
c. a = 64
b = 58
d. a = 49
b = 82
e. a = 92
b = 44
f. a = 45
b = 90

13. Add up to 90° or two angles are complementary.

14. No, as an obtuse angle is > 90°, and the angle sum of a triangle is 180 °

15. 18

UNIT 7

1. a. 79
b. 55
c. 58
d. 114
e. 242
f. x = 106
y = 105
g. p = 103
x = 71
h. x = 58
y = 64
i. 28
j. a = 115
b = 65
c = 65
k. x = 272
y = 28
l. 114
m. x = 126
y = 93
z = 66
n. 134
o. a = 102
b = 40
c = 38

2.

3	1	180
4	2	360
5	3	540
6	4	720
7	5	900
8	6	1080
9	7	1260
10	8	1440
n	n-2	(n-2)× 180

3 a. 1800 **b.** 2880
c. 3240 **d.** 4140
e. 2520 **f.** 5400

4 a. 120° **b.** 135°
c. 144° **d.** 150°
e. 157.5° **f.** 160°

5 a. 133° **b.** 112°
c. 61° **d.** 82°
e. 82° **f.** 185°

6. a. 60°, 60°, 60°
b. 108°, 72°, 54°, 54°
c. 120°, 60°, 60°, 60°
d. 135°, 45°, 45°, 90°

7. a. 35°
b. 44°
c. 52.5°
d. 65°
e. 120°
f. 30°

8. a. 57°, 123°
b. 113°, 67°
c. 56°, 124°

9. a. 79°, 79°, 61°, 119°
b. 36°, 72°, 36°, 108°
c. 40°, 80°, 60°

10. a. 75°
b. 79°
c. 41°

11. a. 66°
b. 57°
c. 222°

12. a. 14
b. 23

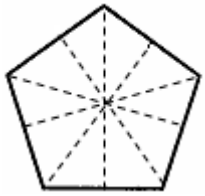
13. a. n = 12
b. n = 10

14. m = 7, n = 12

UNIT 8

1a. yes
b. no
c. yes
d. no
e. yes
f. yes
g. yes
h. no

2a.



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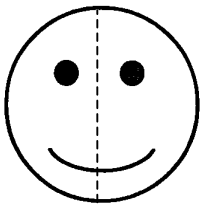

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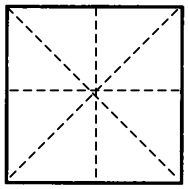

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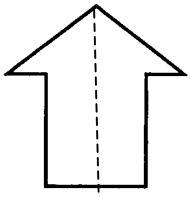

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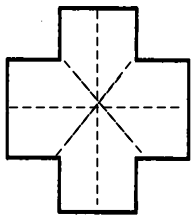

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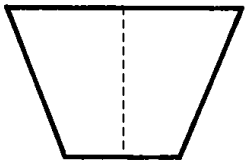

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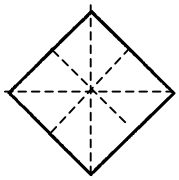

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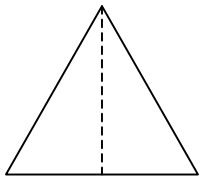
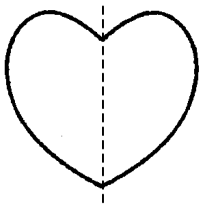


i.



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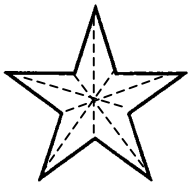
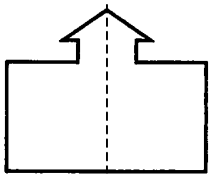
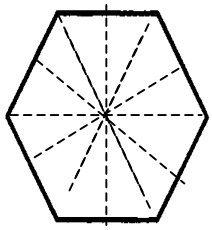


k.



l.



3. (Teacher's mark)

4. a. (Teacher's mark)
b.(Teacher's mark)

5.

6. a. 4
b. 2
c. 3
d. 5
e. 6
f. 8
g. 4
h. 4
i. 2
j. 2
k. 2
l. 5

7. d.

8. no

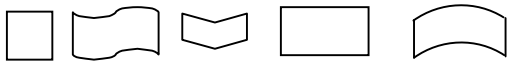
9. yes

10. It is the same message upside down.

11. a. 5
b. 6
c. 2
d. Infinite

12. (Teacher's mark)

13.



14.

15. a. no
b. yes
c. yes
d. no

16. a. (teacher's mark)
b. (teacher's mark)
c. (teacher's mark)
d. (teacher's mark)
e. (teacher's mark)
f. (teacher's mark)

17. a. (teacher's mark)
b. (teacher's mark)
c. (teacher's mark)
d. (teacher's mark)

UNIT 9

1.

6	8	12	2
6	8	12	2
8	12	18	2
5	5	8	2
4	4	6	2

2. a, c, e

3. a. Triangular Pyramid
b. Cube
c. Sphere
d. Cylinder
e. Hexagonal Pyramid
f. Triangular Prism
g. Rectangular Prism
h. Rectangular Pyramid

4. a. Cone, Cylinder
b. Triangular Prism, Rectangular Prism
c. Cylinder, Cylinder
d. Square Pyramid, Square Pyramid
e. Triangular Prism, Rectangular Prism
f. Hemisphere, Cylinder

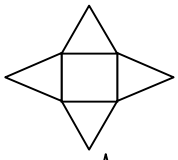
5. a. Square
b. Triangle
c. Triangle
d. Square
e. Trapezium
f. Circle

6. a. Does not have a uniform cross section.
b. Does not have a uniform cross section.
c. Does not have a uniform cross section.
d. Does not have a uniform cross section.

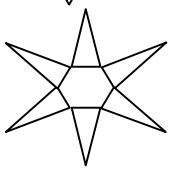
7. a. Point B
b. CF
c. Line GH
d. DC, EF, HG
e. parallel
f. skew
g. Yes
h. Yes
i. skew
j. ABCD and ADEH
k. Point G

8. a. Triangular Pyramid
b. Triangular Prism
c. Triangular Pyramid
d. Triangular Prism
e. Rectangular Prism
f. Square Pyramid

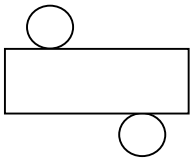
9. a.



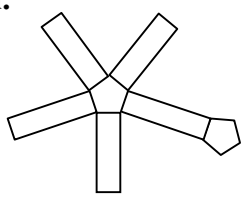
b.



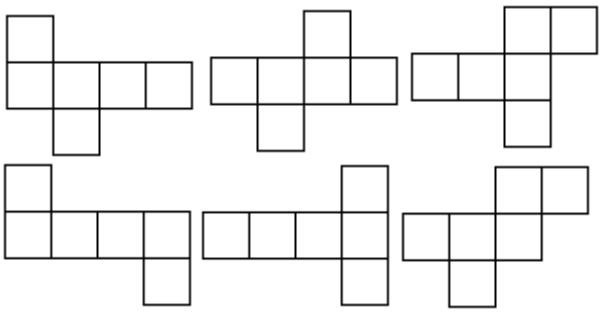
c.



d.



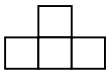
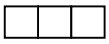
10.



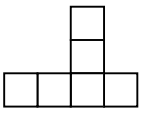
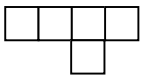
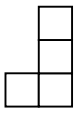
11. a. cylinder
b. cone
c. pentagonal pyramid
d. Rectangular Prism

12. a.

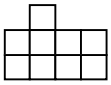
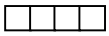
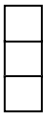
Front: top: Right:

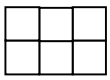
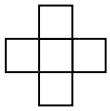
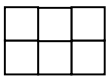

b. Front: Top: Right:

c. Front: Top: Right:

d. Front: Top: Right:

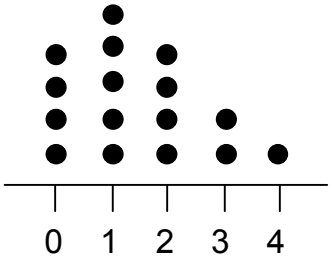




13. a. Rectangular Prism
b. Triangular Prism
c. Trapezoidal Prism
d. Sphere

UNIT 10

1. A
2. 87
3. D
4. Mean: 2.5 Median: 2.5 Mode: 1
5. Mean: 29.6 Median: 27.5 Mode: -
6. 98
7. A
8. Median: 12 Mode: 12 Range: 4
9. a. Mean
b. Mode
c. Range
d. Mean

10.



11. a.

	Class B	Class A
Mean	41	43
Mode	51	46
Median	41	42
Range	46	40

b. Overall, Class A performed better as their mean was higher. Their range was smaller in comparison to Class B, but their median was higher, showing that they all had similar marks and not many outliers.

12. a. June
b. June
c. March, yes
d. The higher the pollution level, the higher number of dead fish.

13. a. 36, 43, 50
b. 76, 72, 68
c. 54, 162, 486
d. 27, 81, 243
e. 25, 36, 49
f. 11, 16, 22

14. a. no. of matches = 2 × no. of triangles + 1
b. 3, 7, 11, 15, 19, 23, 27, 31, 35, 39
c. 199 matches

15. a. 9, 10, 11, 12
b. 8, 14, 20, 26
c. 2, 12, 22, 32
d. 18, 21, 24, 27
e. 15, 20, 25, 30
f. 18, 35, 56, 81

16. a. 36
b. 23
c. 3
d. 23
e. 44
f. 0

17. a. (Variables may differ)
Rule: m = 10f – 2

Figure no.	1	2	3
No. of matches	8	18	28

b. y = 7x – 2

Figure no.	1	2	3
No. of matches	5	12	19

Rule: m = 7f – 2

18. a. point
b. plane
c. scalene triangle
d. line
e. straight angle
f. parallel lines
g. isosceles triangle
h. ray
i. skew lines
j. complementary angles
k. acute- angled triangle
l. angle
m. perpendicular lines
n. supplementary angles
o. acute angles
p. obtuse- angled triangle
q. vertically opposite angles
r. adjacent angles
s. obtuse angle
t. reflex angle
u. collinear points
v. equilateral triangle
w. right angle
x. transversal
y. parallelogram
z. trapezium
aa. Kite
bb. Rectangle / square
cc. Square
dd. Concurrent Lines
ee. Polyhedra
ff. Prism
gg. Tessellation
hh. Diagonals

19. (Answers may vary)
a. CQ & PR, BS & QR, RQ & PD, BS & CQ
b. B, A, Q, S
c. C, Q, R
d. PD & CQ & AC
e. PD & CQ & AC

20a. False
b. False
c. False
d. False
e. True
f. True
g. False
h. False

21a.
☆ = 75°
● = 105°
= 105°

b.
☆ = 135°
● = 45°
= 45°

c.
☆ = 30°
● = 150°
= 150°

d.
● = 50°
= 55°

e.
● = 62°
= 28°

f.
☆ = 68°
● = 22°
= 68°

22. a. x = 32°
b. x = 78° y = 102° z = 116°
c. y = 11°
d. x = 137°
e. x = 59°
f. x = 42°
y = 66°
z = 72°

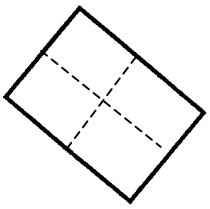
23. a. 97 **b.** 55 **c.** 118 **d.** 107
e. 100 **f.** 90

24. a. 46° **b.** 110° **c.** 22°

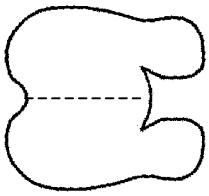
25. a. quadrilateral
b. heptagon
c. square
d. parallelogram
e. equilateral triangle
f. trapezium
g. decagon
h. octagon
i. nonagon

26. a. no
b. yes, 4
c. yes, 1
d. yes, 5
e. no
f. yes, 4

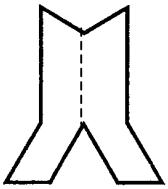
27 a.



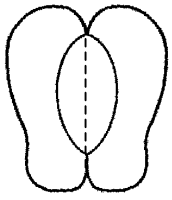
b.



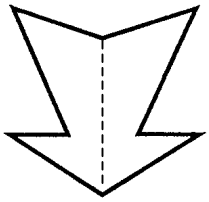
c.



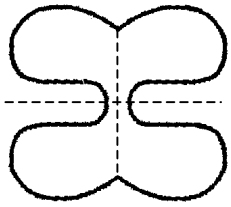
d.



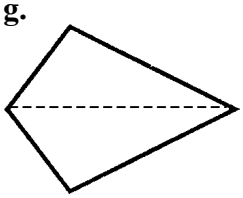
e.



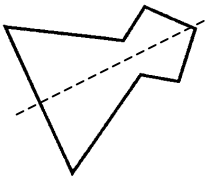
f.



g.



h.

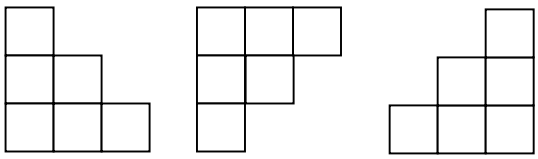


28. a. (Teachers mark)
b. (Teachers mark)

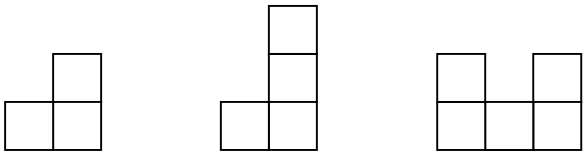
29. a. (Teachers mark)
b. (Teachers mark)

30. 6, 8, 12, circular, curved, spherical, curved, 2, circular, curved.

31. a.
Front: Top: Right:



b.
Front: Top: Right:



Mathematics

HOMEWORK ANSWERS

TERM 1

UNIT 1 - 9

YEAR 7

UNIT 1

1. 15.4

2. $310.67

3. 35, 37, 39, 41, 43, 45, 47, 49, 51, 53

4. 2.25

5. 195

6. a. 15.9
b. 21

7. 27

8. 37.8

9. a. 34 **b.** 10
c. 9 **d.** 20
e. 38.5 **f.** 16.5
g. 17 **h.** 20
i. 4.2 **j.** 5.19

10. a. 12^{th}
b. 19^{th}
c. 78^{th}

11. a. 11^{th} & 12^{th}
b. 44^{th} & 45^{th}
c. 87^{th} & 88^{th}

12. a. 37
b. 153

13. 51

14. a. 30
b. 17
c. 11
d. 8
e. 15, 25
f. 2, 3, 5, 8

15. a. 33
b. 14
c. 29
d. 21
e. 6.4
f. 27

16. B

17. a. 8
b. 89
c. 97
d. 44

18. a. Median: 17.5 Mode: 17 Range: 5
b. Median: 48 Mode: 48 Range: 5
c. Median: 14.5 Mode: 15 Range: 4
d. Median: 23 Mode: 22, 24 Range: 5
e. Median: 35 Mode: 21, 32, 46 Range: 49
f. Median: 134 Mode: 134 Range: 46

19. 70.7

20. 95%

21. 2kg

22. 70.67kg

23. 4.3

24. a. Mode
b. Mean
c. Mean
d. Mean
e. Mean
f. Range
g. Mean

25 . a. 36.9, 34, 34
b. Mean
c. No, the mean is higher and may sound more impressive

26. a. Only mode (blue). Median and mode would refer to the number of people who like each colour and therefore these measures are not really determinable.
b. No
c. Blue was the most common favourite colour while black was the least

27. a. 9
b. 10
c. Modal shoe size, he would need more pairs of shoes in that size to satisfy demand

UNIT 2

1. a. Bus: $\frac{40}{150}=\frac{4}{15}=\frac{280}{1050}$ Not: $\frac{57}{350}=\frac{171}{1050}$

Therefore, yes

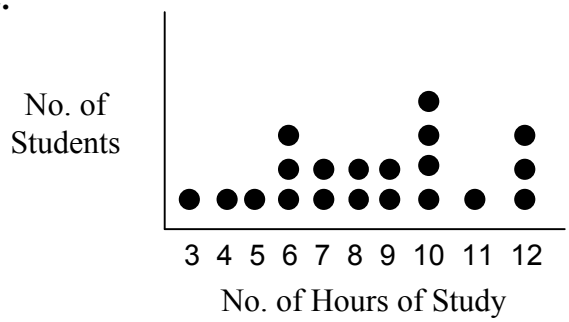
b. – She could have surveyed the same number of people using each mode of transport, eg. 100 of each

- She could have surveyed them across 5 consecutive days rather than just Tuesdays

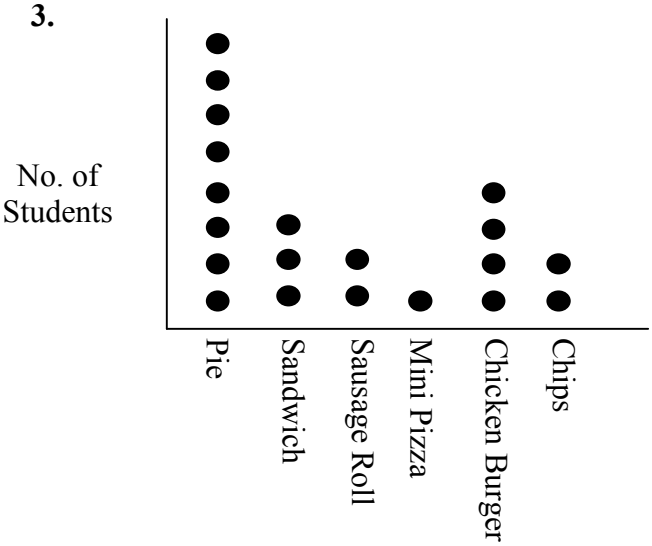
c. About right.

About right; the table shows 200 out of 500 students walked to school, but it includes Year 8 as well, not just Year 7.

2.



3.



4.a. Range: 35, Mode: 98, Median: 97.5

b. 20

c. 113

d. $\frac{7}{20}=35\%$

e. $\frac{6}{20}=\frac{3}{10}$

5.

Stem	Leaf
11	**1 3 4 5 7 9**
12	**0 8**
13	**2 8**
14	**3 5 8 9**
15	**2 5 5 6**
16	**2 3 6**

6. a. Positive

b. No correlation

c. Positive

d. No correlation

e. Negative

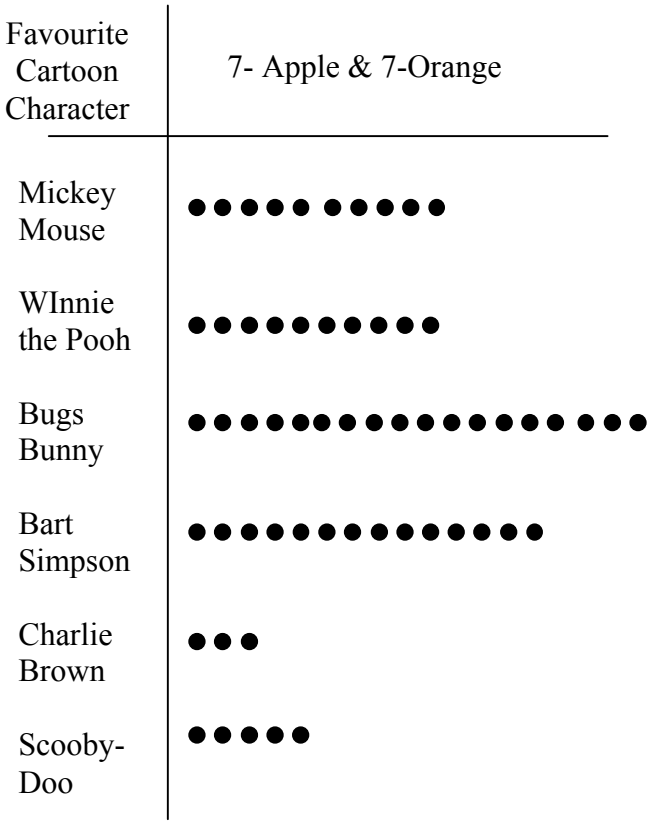
f. Negative

7. a. Bugs Bunny

b. Charlie Brown

c. $\frac{9}{30}=\frac{3}{10}=$ **30%**

d.



8. a.

Leaf	Stem	Leaf
9 8 5 3	5	
2 2	6	4 6
3	7	0 1 7
0	8	3 5
2	9	2 7

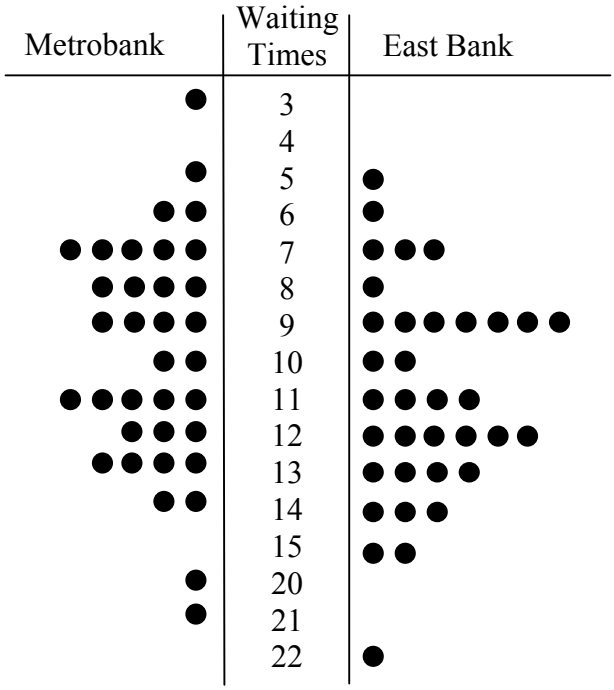
b. 92
c. 64
d. Team B, all their scores are grouped more closely and nearer to the higher end of the scores than Team A's scores which are more spread out and weighted near the 50's

9. a. Boys: 19 Girls: 25
b. 63
c. 36
d. 14
e. 16
f. $\frac{10}{44} = \frac{5}{22}$
g. $\frac{8}{44} = 18\%$

10. a. 3
b. 10
c. 15
d. Maths: 60 Science: 80
e. (90,90)
f. i. ~32
ii. ~70

11. a. No correlation, therefore no relationship
b. Positive correlation, therefore longer hours of study often mean higher school marks
c. Negative correlation, therefore more food consumed often means lower energy levels
d. No correlation, therefore no relationship

12. a.



b. Metrobank: 7, 11 East Bank: 9
c. Metrobank: 20, 21 East Bank: 22
d. Metrobank: 10 East Bank: 11
e. No

UNIT 3

1. a. 52, 50, 48
b. 695, 740, 785
c. 18, 54, 162
d. 32, 16, 8
e. 16, 64, 256
f. 800, $266\frac{2}{3}$, $88\frac{8}{9}$
g. 1, 1, 1
h. 6, 8, 12
i. 9, 81, 6561
j. 15, 224, 50175

2. a. 21, add 5
b. 75, add 7
c. 25, minus 3
d. 9, divide by 3
e. 3200, multiply by 4
f. 64, add 20
g. 0.000003, divide by 100
h. 1350, minus 50
i. 1.15, add 0.05
j. 508, halve

3. a. 54, 162, 486
b. 106, 100, 94
c. 32, 64, 128
d. 1512, 9072, 54432
e. 31, 43, 57
f. 25, 36, 49
g. 77, 157, 317
h. 37, 49, 53
i. 25, 35, 47
j. 100, 196, 388

4. a. 13
b. 15, 11
c. 24
d. 128, 64
e. 283, 850
f. 36
g. 64, 256
h. 40, 8
i. 1.11
j. 118, 168

5. a. $y = 4x$, 16
b. $y = 2x + 1$, 9
c. $y = 9x + 1$, 37
d. $y = 7x$, 28
e. $y = 5x + 1$, 21

6. 1, 5, 13, 27

7. 3, 9, 18, 30

8. 4, 6, 11, 40

9. 5, 18, 41

10. a. no. of toothpicks = 6× no. of hexagons
b. 6, 12, 18, 24, 30, 36, 42, 48, 54, 60
c. 600

11. a. 5
b. no. of toothpicks = figure no.× 5 + 1
c. 6, 11, 16, 21, 26, 31, 36, 41, 46, 51
d. 1001

12. a. bottom no. = 2× top no. + 1
b. bottom no. = top no. + 9
c. bottom no. = 4×top no. – 3
d. bottom number = top number^2
e. bottom no. = top no. ^{2} + 1
f. bottom no. = top no. ^{2} – 1
g. bottom no. = square root of top no.

13. a. no. of toothpicks = 8 × figure no. + 1
b. i. 81
ii. 121
iii. 409

14. a.

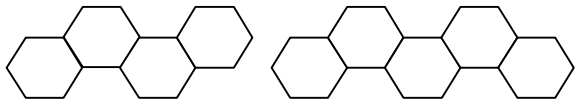


Figure 4 Figure 5

b. no. of toothpicks = 5 × no. of hexagons + 1
c. i. 26
ii. 41
iii. 61
d. 14

15. a. $t = 3x + 1$
b. $t = h + 5$
c. $A = a \times b$
d. $y = x^2 + 1$
e. $p = 2q - 3$

16. a. 1, 5, 9, 13
b. 1, 10, 37, 82
c. 8, 13, 18, 23
d. 19, 39, 59, 79
e. 30, 42, 54, 66
f. 4.5, 22.5, 94.5, 382.5
g. 6, 27, 66, 123
h. 6, 15, 28, 45
i. 6, 18, 38, 66

17. a. 13
b. 26
c. 30
d. 32
e. 32
f. 27
g. 85
h. 69
i. $3\frac{3}{4}$
j. 36
k. 10
l. 36

18. no. of seats = no. of tables × 4 + 2
s = 4t + 2
= 4 ×8 + 2
= 34

19. no. of tooth picks = 6 × figure no. + 1
t = 6f + 1
= 6×15+1
= 91

UNIT 4

1. a. plane
b. line
c. line
d. point
e. plane
f. point
g. plane
h. plane
i. point
j. plane
k. plane
l. line

2. a. 32, 18
b. 20, 12
c. 36, 14
d. 21, 9

3. a. $\overleftrightarrow{BD}, \overleftrightarrow{AB}, \overleftrightarrow{DE}, \overleftrightarrow{BD}, \overleftrightarrow{CD}$
b. (answers may vary) possible answers are AB, AC, BC, BD, CD, CE, DE
c. i. ABC OR CDE
ii. (Answers may vary) possible answer: ABE
iii. AC and BD, CE and BD, AC and CE

4. a. Any pair between A, P, Q, R or A, B, C, D or PB, QC, or RD
b. All pairs between l, m, n
c. All pairs between p, l, m, n and all pairs between q, l, m, n, and p and q
d. l and p
e. m and q
f. (Answers may vary) possible answer: ABQ

5. a. l, q, r
b. m, p r
c. A: l, q r B: m, p, r

6. a. $A, \angle A, \angle BAC, \angle CAB$
b. $X, \angle X, \angle YXZ, \angle ZXY$
c. $C, \angle C, \angle MCN, \angle NCM$
d. $T, \angle T, \angle NTS, \angle STN$

7. a. $\angle A, \angle B, \angle C, \angle D$
b. $\angle SAN, \angle RBQ, \angle RAN$
c. $\angle ZOY, \angle YOX$
d.
$\angle d = \angle QRW$
$\angle e = \angle PQR$
$\angle a = \angle VPT$
$\angle b = \angle PTS$
$\angle c = \angle RST$
e.
$\angle x = \angle BOA$
$\angle y = \angle COD$
$\angle m = \angle CDO$
$\angle n = \angle EDC$
f.
$\angle v = \angle BAF$
$\angle w = \angle HBC$
$\angle x = \angle DEF$
$\angle y = \angle BFD$
$\angle z = \angle GFH$
$\angle m = \angle BCD$

8. a. obtuse
b. right
c. reflex
d. acute
e. straight
f. acute
g. reflex
h. acute

9. a. ∠ A acute, ∠ B obtuse, ∠ C acute, ∠ D obtuse
b. ∠ A acute, ∠ B acute, ∠ C acute
c. ∠ A right, ∠ B obtuse, ∠ C acute, ∠ D right
d. ∠ A acute, ∠ B obtuse, ∠ C acute

10. a. right
b. straight
c. obtuse
d. obtuse
e. right
f. straight
g. right
h. obtuse

11. a. 45°
b. 36°
c. 210°
d. 240°

12. a. obtuse
b. acute
c. reflex
d. reflex
e. right
f. acute
g. reflex
h. reflex

13. a. 30°
b. 180°
c. 135°
d. 18°
e. 9°
f. 108°

14a. straight
b. acute
c. obtuse
d. obtuse
e. obtuse
f. acute

15 (answers may vary**)**
a. ≈ 135
b. ≈57
c. ≈18
d. ≈121

161. ∠BAC
2. ∠DAE
3. ∠ACD
4. ∠BCD
5. ∠ADC
6. ∠AFE

17a. 110°
b. 55°
c. 145°
d. 125°

18a. 120° (reflex = 240)
b. 150° (reflex = 210)
c. 135° (reflex = 225)
d. 75° (reflex = 285)

19i. teachers mark
ii. teachers mark
iii. teachers mark
iv. teachers mark
v. teachers mark
vi. teachers mark
vii. 720°

UNIT 5

1. 1&2, 2&3, 3&4, 4&5, 3&6, 4&7, 1&7, 6&7

2. no

3. a. 58°
b. 14°
c. 39°
d. 78°

4. a. 126°
b. 90°
c. 5°
d. 146°

5. a. ∠BGH or ∠AGE
b. ∠AGH
c. ∠DHF
d. ∠AGB
∠EGH
∠CHD
∠GHF
e. Answers may vary. Possible answers:
∠AGE and ∠EGB
∠AGE and ∠AGH
∠BGH and ∠EGB
∠AGH and ∠BGH
∠CHG and ∠CHF
∠CHG and ∠GHD
∠GHD and ∠DHF
∠FHC and ∠DHF

6. a. 1, 7, 4
b. Answer may vary, possible answers include: 1 and 2, 1 and 7, 2 and 3, 3 and 4, 3 and 6, 4 and 5, 4 and 7, 6 and 7
c. 1 and 2, or 3 and 4
d. angle sum adds to 90°
e. 1, 4, 7
f. angles sum adds to 180°

7. a. 33°
b. 45°, 45°
c. 75°
d. 270°
e. 48°
f. a =136°, b = 23°
g. 23°, 23°
h. 38°
i. 105°
j. 142°
k. 45°
l. 26°
m. 50°
n. g = 61°
o. 57°
p. x = 81°
q. x = 36°
r. a = 84°, b = 21°, c = 48°

8. a. x = 14
b. x = 99
c. x = 48
d. x = 33

9. a. none
b. none
c. alternate exterior
d. alternate interior
e. alternate interior
f. corresponding angle
g. corresponding angle
h. co- interior
i. alternate exterior
j. corresponding angle

10

a. 115	**b.** 65
c. 115	**d.** 65
e. 115	**f.** 115
g. 65	**h.** 68
i. 112	**j.** 112
k. 68	**l.** 68
m. 112	**n.** 68

11.
∠1=108
∠2=72
∠3=72
∠4=108
∠5=108
∠6=72
∠7=72
∠8=108

12. ∠*HKL*=145°

13. a. a = 72°
b = 108°
b. a = 55°
b = 125°
c. a = 54°
b = 126°
d. a = 78°
b = 102°
e. a = 115°
b = 65°
f. a = 156°
b = 156°

14. a. no, co- interior angles are not supplementary.
b. yes, alternate exterior angles are equal.
c. yes, co- interior angles are supplementary.
d. no, co- interior angles are not supplementary
e. no, co-interior angles are not supplementary.
f. no, corresponding angles are not equal.

15. a. $\angle 1 = 100$, $\angle 5 = 100$
b. $\angle 4 = 96°, \angle 6 = 84°$
c. $\angle 2 = 72.5°, \angle 8 = 107.5°$
d.
$2x + y + 3x - y = 180$
$5x = 180$
$x = 36$
$\angle 1 = 36 + y$
$\angle 2 = 108 - y$
e.
$\angle 5 = x + 2y$
$= 170 - 3y$
f. 60°
g.
$\angle 3 = 80$
$\angle 8 = 100$
h.
$90 - \angle 6 = 180 - \angle 4$
$\angle 4 - \angle 6 = 90$
$\angle 4 + \angle 6 = 180$
$2\angle 4 = 270$
$\angle 4 = 135$
$\angle 6 = 45$

16.
$\angle BAC = \angle ACD$
$\therefore AB \parallel CD$ (*alternate angles are equal*)
$\angle FEC + \angle ECD = 180°$
$\therefore EF \parallel CD$ *(Co-interior angles are supplementary)*
$AB \parallel EF$ (*both parallel to CD*)

17. a = 125°
b = 55°
c = 55°
d = 55°

18.
$AD \parallel BC$ *(Co-interior angles are supplementary)*
$AB \parallel DC$ *(Co-interior angles are supplementary)*

19. a. x = 77 (co- interior angles are supplementary)
b. x = 54 (angles on a straight line)
y=126(alternate exterior angles are equal)
c. x = 60 (co- interior angles)
d. x = 50 (alternate interior angles are equal)
y = 50 (angle sum of Δ)
e. x = 43 (corresponding angles, vertically opposite angles, adjacent angles)
y = 137 (co- interior angles)
f. x = 120 (co – interior angels are equal)
y = 60 (vertically opposite angles)
g. x = 100 (alternate interior angles)
h. x = 105 (vertically opposite angles)
i. x = 54 (alternate angles)
y = 126 (co – interior angles)

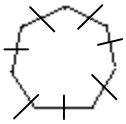
20.
$l_1 \parallel l_2$ *co – interior angles are equal.*
$m_1 \parallel m_2$ (*alternate angles are equal*)

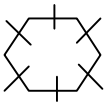
UNIT 6

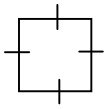
1. a, b, c, e, h
2. a, b, c, g

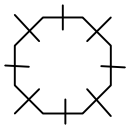
3a. hexagon
b. heptagon
c. hexagon
d. nonagon
e. octagon
f. decagon
g. pentagon
h. octagon

4a. 

b. 

c. 

d. 

e. 

f. 

5. heptagon, 7, 7, 14
square, 4, 4, 2
octagon, 8, 8, 20
dodecagon, 12, 12, 54
decagon, 10, 10, 35

6. a. acute **b.** obtuse
c. right **d.** equilateral

7. a. equilateral
b. scalene
c. isosceles
d. isosceles

8. b and d

9.

CDE	FGH	KLM	NOP	PQR	TSU	ABC
				✓	✓	✓
	✓				✓	
			✓			
		✓				✓
✓	✓	✓	✓			
				✓	✓	

10. a. 140°
b. 40°
c. 50°
d. 60°
e. 100°
f. 33°

11.

Trap	Kite	Parm	Square	Rhom
No	Yes	Yes	Yes	Yes
No	Yes	No	Yes	No
No	Yes	No	Yes	Yes
No	No	No	Yes	Yes
No	No	No	Yes	No
No	No	No	Yes	No
No	No	Yes	Yes	Yes
Yes	No	Yes	Yes	Yes
No	No	Yes	Yes	Yes

12a. False **b.** False
c. False **d.** True
e. False **f.** True
g. True **h.** False
i. False **j.** True

13a. 45°, 90°, 45°
b. 135°, 30°
c. 70°, 70°
d. 60°
e. 80°, 50°
f. 84°, 48°

14. No, as an obtuse angle is > 90°, and if these are two obtuse angles then the angle sum of triangle will exceed 180°

15. They will be equal to 40°
16. Right- angled triangle

17. a. n = 46°
b. a = 10°
c. x = 50°
d. x = 25°
y = 130°
z = 25°
e. x = 58°
y = 32°
f. x = 42°

18. 48 triangles, hexagon

UNIT 7

1. a. x = 34°
b. n = 30°
c. x = 115°
d. x = 120°
y = 150°
e. i =40°
f. m = 135°
n = 45°
p = 45°
q = 135°
g. m =35°
n =75°
h. x = 44°
i. m =40°
n = 150°
o = 95°
p = 75°
j. x = 91°
y =40°
z =49°
k. x =42°
y =72°
l. x = 70°
y = 20°
m. x = 70°
y = 95°
n. x =103°
o. x = 32°

2. a. x = 43°
y = 92°
b. x = 35°
y = 65°
z = 115°
c. x = 30°
y = 60°
z = 30°
d. v = 50°
w = 70°
x = 80°
y = 70°
z = 110°
e. x = 55°
f. x = 70°
y = 30°
z = 80°
g. x = 76°
y = 101°

h. $x = 124°$
$y = 56°$
$z = 82°$
i. $x = 65°$
j. $a = 88°$
$b = 124°$

3. 540, 720, 1260, 360, 1800, 1440, 360, 1620

4. $58°$

5. $68°$

6. a. $2340°$
b. $3420°$
c. $2880°$
d. $5040°$
e. $2160°$
f. $7200°$

7. a. $108°$
b. $128\frac{4}{7}°$
c. $147\frac{3}{11}°$
d. $154\frac{2}{7}°$
e. $158\frac{14}{17}°$
f. $162°$

8. a. $126°$
b. $107°$
c. $131°$
d. $119°$
e. $145°$
f. $135°$

9. a. $72°$
b. $45°$
c. $36°$
d. $60°$
e. $40°$
f. $30°$

10. a. $18°$
b. $162°$
c. $3240°$

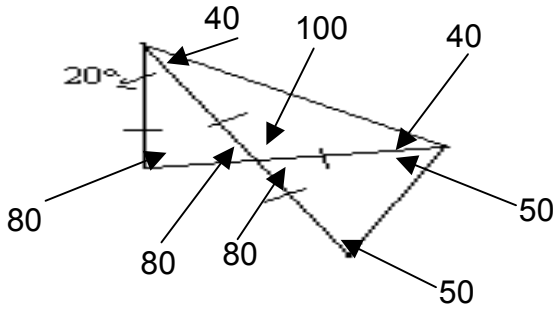
11. a. 3
b. 5
c. 12
d. 30

12. a. 16
b. 24

13. $2880°$

14. a. $a = 80°$
$b = 19°$
b. $a = 19\frac{2}{7}°$
$b = 7°$
c. $a = 20°$
$b = 50°$
d. $x = 135°$
$y = 135°$
e. $x = 72°$
$y = 108°$
f. $w = 60°$
$x = 60°$
$y = 60°$
$z = 60°$
g. $x = 140°$
$y = 110°$
h. $x = 36°$
$y = 72°$
i. $x = 120°$
$y = 70°$
j. . $x = 100°$
$y = 45°$
$z = 55°$

15.



16. $90°$

17. a. $x = 60°$
$y = 60°$
b. $x = 45°$
$y = 135°$
c. $x = 36°$
$y = 72°$

18. a. 110°, 140°
b. 60°, 110°
c. 90°
d. 70°, 80°, 150°
e. w = 124°
x =11°
y = 45°
z =124°
f. 64°.

19. 5, 10

20. 72°

21. 36

22. n = 8

23. 12 sides

24. 90°, 60°, 30°

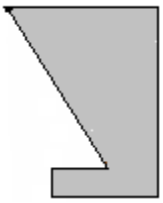
25. 180°

UNIT 8

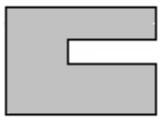
1 **a.** yes **b.** no **c.** yes
d. yes **e.** no **f.** yes
g. yes **h.** no **i.** no

2a.

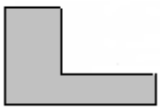
b.



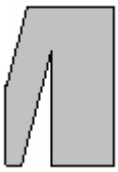
c.



d.



e.



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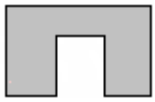
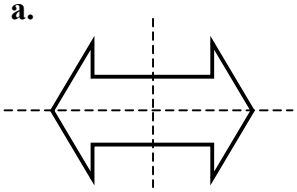


3
a.



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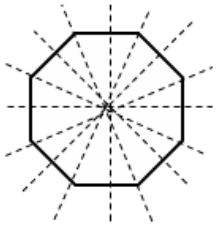

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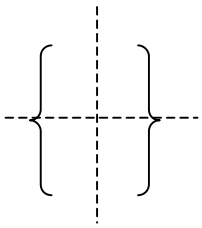

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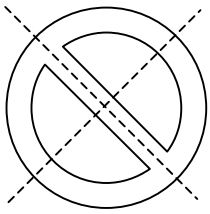

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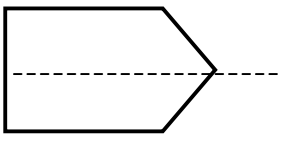

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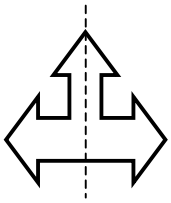
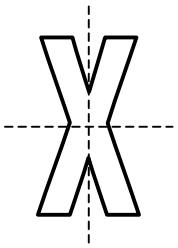
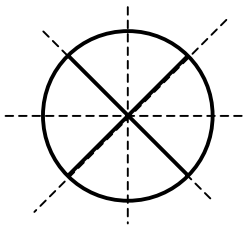


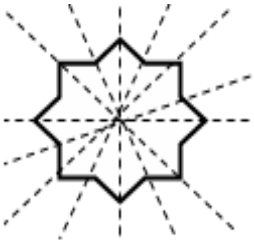
g.



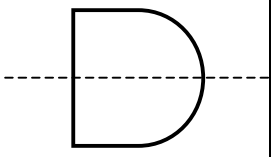
h.



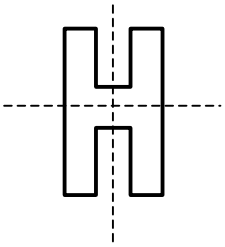
i.



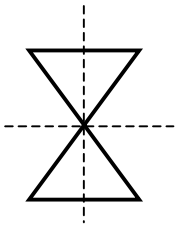
j.



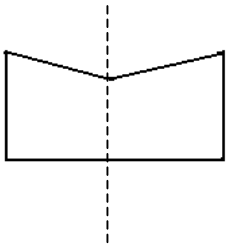
k.



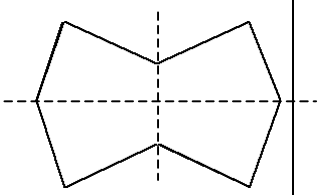
l.



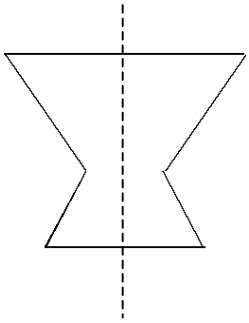
m.



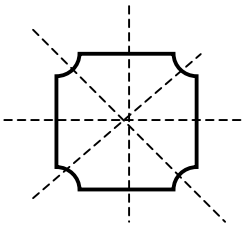
n.



o.

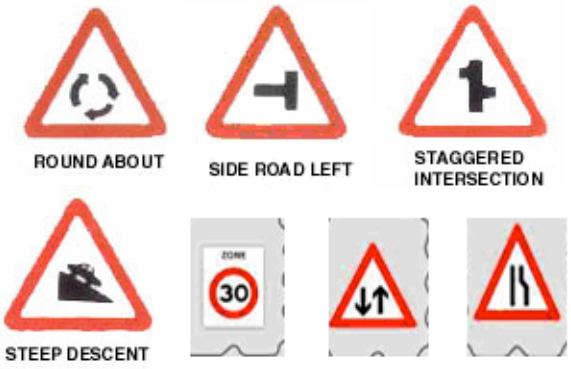


p.



4. a. Teachers mark
b. Teachers mark

5.



6. a. Yes, 4
b. Yes, 8
c. Yes, 2
d. yes, 4
e. Yes, 2
f. Yes, 4
g. Yes, 6
h. No
i. no
j. no
k. yes, 4
l. Yes, 4

7. not symmetrical, has 5 rotational symmetry
Is symmetrical, No rotational symmetry

8. Teacher check

9. Yes

10. Yes

11. Yes

12. Yes

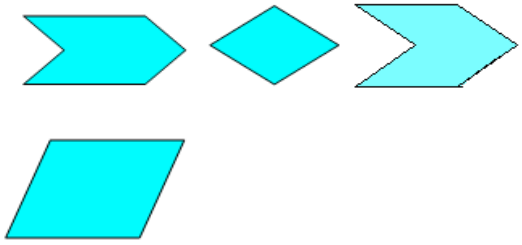
13. Yes

14. Yes

15. H – 2
Z – 2
S – 2
O – ∞
N - 2

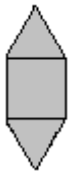
16a. 8
b. 3
c. 4
d. 1

17.

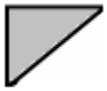


18. Teachers mark

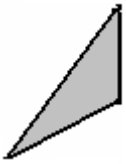
19. a.



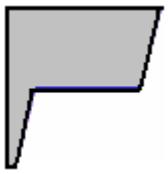
b.



c.



d.



20. a. No
b. Yes
c. No
d. Yes

21. a. Teachers mark
b. Teachers mark
c. Teachers mark
d. Teachers mark

UNIT 9

1.

6	8	12	2
5	6	9	2
7	10	15	2
6	8	12	2
5	5	8	2
7	7	12	2

2. a, d, f

3.

Hexagonal prism	8	12	18
Pentagonal Pyramid	6	6	10
Cone	2	1	1
Frustrum	3	0	2
Rectangular Prism	6	8	12
Rectangular Pyramid	5	5	8

4. a. circle
b. trapezium
c. hexagon
d. circle

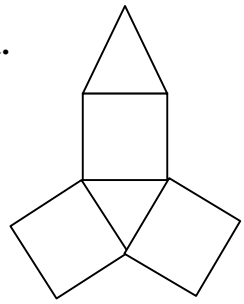
5. a. cylinder, frustrum
b. cone, square/rectangular prism
c. cylinder, frustrum
d. hexagonal prism, hexagonal pyramid
e. rectangular pyramid, rectangular prism
f. hemisphere, rectangular prism
g. triangular prism, rectangular prism

6. a. has a curved face
b. has a curved face and has less than 4 sides
c. has a curved face.

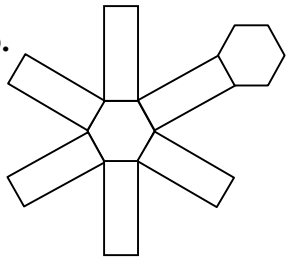
7. a. D
b. AB
c. ED
d. AB, CD
e. skew
f. parallel
g. Yes
h. No
i. BFC, CDEF
j. D

8. a. rectangular pyramid
b. octahedron
c. dodecahedron
d. triangular prism
e. rectangular prism
f. pentagonal prism

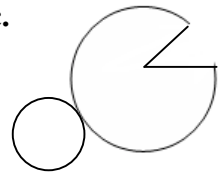
9. a.



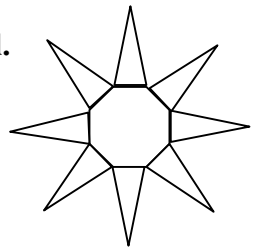
b.



c.



d.



10. a, c, e, f, h

11. a, b

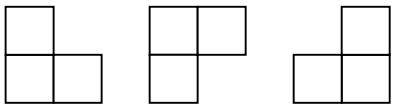
12. b, c, d, e, g,

13. a, c, d

14. a. triangular pyramid
b. octahedron
c. cube
d. hexagonal prism

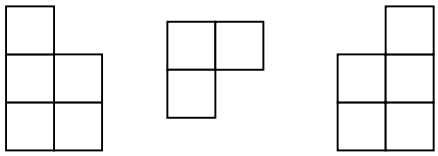
15. a.

Front: Top: Right:



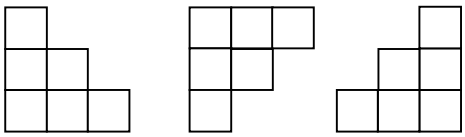
b.

Front: Top: Right:



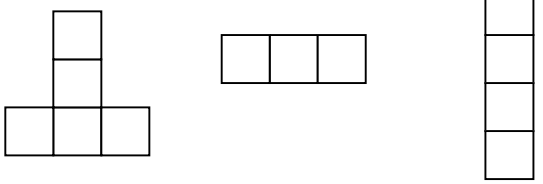
c.

Front: Top: Right:



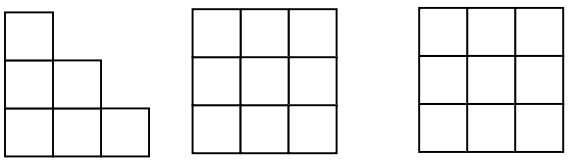
d.

Front: Top: Right:



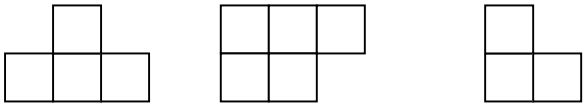
e.

Front: Top: Right:



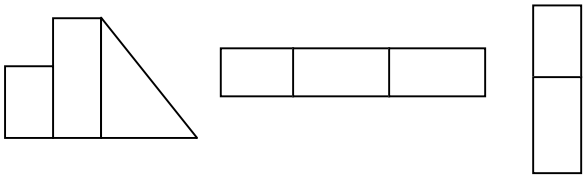
f.

Front: Top: Right:

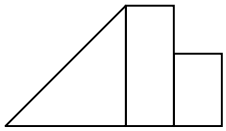


16.

Front: Top: Right:



Back:



17. E

18. D

19. a. Pentagonal Prism,

b. Cylinder

c. hexagonal pyramid

d.