11.1 Polyhedrons

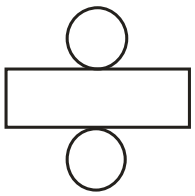
Answers

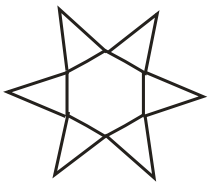
1. V = 8
2. F = 9
3. E = 30
4. F = 6
5. E = 6
6. V = 6
7. F = 9
8. V = 6
9. Yes, hexagonal pyramid. F = 7, V = 7, E = 12
10. No, a cone has a curved face.
11. Yes, hexagonal prism. F = 8, V = 12, E = 18
12. No, a hemisphere has a curved face.
13. Yes, trapezoidal prism. F = 6, V = 8, E = 12

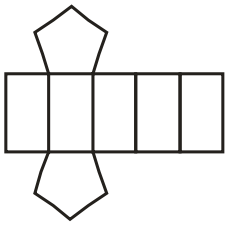
11.2 Cross-Sections and Nets

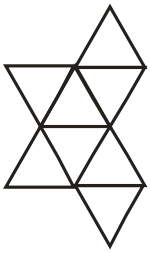
Answers

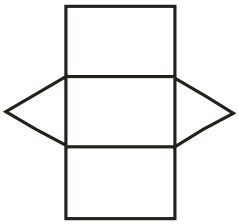
1. Rectangle
2. Trapezoid

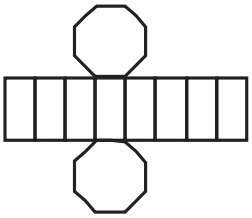
3. 

4. 

5. 

6. 

7. 

8. 

9. Cube
10. Regular Icosahedron
11. Decagonal Pyramid
12. Trapezoidal Prism

11.3 Prisms

Answers

1. rectangular prism
2. 6 rectangles: 2 are 6x7, 2 are 2x6, and 2 are 2x7.
3. 42 in^2 each
4. 52 in^2
5. 136 in^2
6. 960 cubes, yes this is the same as the volume.
7. 280 in^3
8. 4π in^3
9. 6 in
10. 512 in^3
11. 36 u^3
12. Right Triangles, 6 u^2 each
13. 3x6, 4x6, 5x6
14. 72 u^2
15. 84 u^2
16. Lateral surface area is the area of all the sides, total surface area includes the bases.
17. a) 96 in^2, 64 in^3

    b) 192 in^2, 128 in^3
18. 3960 u^3
19. 902.54 u^3
20. 147 u^3
21. 7776 u^3
22. $x = 7$
23. $x = 32$

11.4 Cylinders

Answers

1. No, the volumes do not have to be the same. Explanations will vary.
2. 64π cm^3
3. d = 18
4. 882π cm^3
5. 4580.44 u^3
6. 50.27 u^3
7. x = 24
8. 294π in^3
9. 1258π cm^2
10. 3 cm

11.5 Pyramids

Answers

1. vertex
2. *y*
3. lateral edge
4. *w*
5. *z*
6. *t*
7. 15 in
8. $3\sqrt{3}$ cm
9. 17 units
10. 45 units
11. 316 u^2, 9680 u^3
12. 800 u^2, 1280 u^3
13. 238.68 u^2,146.25 u^3
14. 360 u^2, 400 u^3
15. 542.28 u^2, 409.46 u^3
16. 896 u^2, 1568 u^3
17. a) $3\sqrt{3}$
    b) $9\sqrt{3}$
    c) $36\sqrt{3}$
18. 3 ft
19. 25 in
20. 21 in
21. h = 13.5 in
22. h = 15 in

11.6 Cones

Answers

1. vertex
2. y
3. circle, base
4. slant height
5. $5\sqrt{10}$ cm
6. 30 units
7. 1847.26 u^2, 5277.88 u^3
8. 1507.96 u^2, 1884.96 u^3
9. 6 cm
10. 7 cm
11. h = 3.6 cm
12. r = 3 cm

11.7 Spheres

Answers

1. No, all the cross sections must be circles because there are no edges.
2. radius, center, diameter
3. great circle, hemisphere
4. SA = 256π in^2

   V = $\frac{2048}{3}\pi$ in^3

5. SA = 324π cm^2

   V = 972π cm^3

6. SA = 1600π ft^2

   V = $\frac{32000}{3}\pi$ ft^3

7. SA = 16π m^2

   V = $\frac{32}{3}\pi$ m^2

8. SA = 900π ft^2

   V = 4500π ft^3

9. SA = 1024π in^2

   V = $\frac{16384}{3}\pi$ in^3

10. SA = 676π cm^2

    V = $\frac{8788}{3}\pi$ cm^3

11. SA = 2500π yd^2

    V = $\frac{62500}{3}\pi$ yd^3

12. r = 5.5 in

13. r = 33 m

14. V = $\frac{4}{3}\pi$ ft^3

15. SA = 36π mi^2

16. r = 4.31 cm

17. r = 7.5 ft.

18. 2025π cm^2

11.8 Composite Solids

Answers

1. 216 cm^3
2. 25.13 cm^3
3. 190.87 cm^3
4. 157.08 cm^3
5. 314.16 cm^3
6. 471.24 cm^3
7. 1900π u^2
8. 4680π ft^2
9. 91.875π u^2
10. 7120.94 u^3
11. 191134.50 ft^3
12. 121.86 u^3
13. $h = \frac{20}{3}$ cm
14. 41472 cm^3
15. 364.5π cm^3
16. 40326.89 cm^3
17. 13230 cm^3
18. 425.25π cm^3
19. 14565.96 cm^3
20. 14.14 in^3
21. 63.62 in^3
22. 21.2 in^3

11.9 Area and Volume of Similar Solids

Answers

1. No, $\frac{14}{10} \neq \frac{42}{35}$
2. Yes, the scale factor is 4:3.
3. Yes, the scale factor is 3:5.
4. No, the top base is not in the same proportion as the rest of the given lengths.
5. Yes, cubes have the same length for each side. So, comparing two cubes, the scale factor is just the ratio of the sides.
6. 1:16
7. 8:343
8. 125:729
9. 8:11
10. 5:12
11. 87.48π
12. 4:9
13. 60 cm
14. 512:3375
15. 2:3
16. 4:9
17. $y = 8$, $x = h = 12$
18. $V_s = 170.67, V_l = 576$
19. Yes, spheres and hemispheres only have a radius to compare. So, all spheres and hemispheres are similar.
20. 49:144, 343:1728
21. 64:729