

“Why did Jimmy do well on the Math test after drinking orange juice?”

On #1-11, simplify each expression, then on #12-17 solve each equation. The answer to each problem will match a letter that will allow you to figure out the joke.

Simplify.

1. $\sqrt{-49}$

2. $-\sqrt{-100}$

3. $3\sqrt{-18}$

4. $-5\sqrt{-9}$

5. $3 + \sqrt{-25}$

6. $(3 + 2i) + (2 + 7i)$

7. $(4 - 5i) - (-10 + 3i)$

8. $2(3 + 6i) - 3(7 - 5i)$

9. $(2 + \sqrt{-25}) + (-8 - \sqrt{-9})$

10. $(3 - 5\sqrt{-7}) - (4 + 3\sqrt{-7})$

11. $(2 - 7\sqrt{-18}) + (-3 + 4\sqrt{-50})$

Solve.

12. $x^2 = -81$

13. $x^2 = -2$

14. $x^2 + 49 = 0$

15. $x^2 + 50 = 2$

16. $3x^2 + 12 = x^2 - 20$

17. $5(x^2 - 4) = 3(2x^2 + 6)$

$14 - 8i$	$-10i$	$\pm 9i$	$-15 + 27i$	$\pm 4i$	$-15i$	$3 + 5i$	$-1 - i\sqrt{2}$	$\pm 7i$
E	E	R	S	W	N	A	T	D
$\pm i\sqrt{2}$	$9i\sqrt{2}$	$-1 - 8i\sqrt{7}$	$7i$	$\pm i\sqrt{38}$	$-6 + 2i$	$\pm 4i\sqrt{3}$	$5 + 9i$	
H	T	C	N	A	E	C	O	

$\frac{\quad}{13}$
 $\frac{\quad}{2}$
 $\frac{\quad}{16}$
 $\frac{\quad}{5}$
 $\frac{\quad}{8}$
 $\frac{\quad}{10}$
 $\frac{\quad}{6}$
 $\frac{\quad}{4}$
 $\frac{\quad}{15}$
 $\frac{\quad}{9}$
 $\frac{\quad}{1}$
 $\frac{\quad}{11}$
 $\frac{\quad}{12}$
 $\frac{\quad}{17}$
 $\frac{\quad}{3}$
 $\frac{\quad}{7}$
 $\frac{\quad}{14}$

Simplifying and solving with complex numbers

Joke 9

“What do you call four Spanish-speaking men standing in quicksand?”

Simplify the following expressions. The answer to each problem will match a letter that will allow you to figure out the joke.

1. $5i \cdot 8i$

U: $-11 + 24i$

2. $\sqrt{-2} \cdot \sqrt{-7}$

S: 40

3. $-2\sqrt{-3} \cdot 4\sqrt{5}$

O: $6\sqrt{2} + 3i\sqrt{10}$

4. $\sqrt{-2} \cdot \sqrt{-14} \cdot \sqrt{-7}$

H: $14i$

5. $\sqrt{3} (2\sqrt{6} + \sqrt{-30})$

N: $-\sqrt{14}$

6. $(2 + 3i)(5 + 7i)$

C: $40 - 42i$

7. $(4 + 2i)(5 - 3i)(1 + i)$

D: $4i$

8. $(7 - 3i)^2$

O: $28 + 24i$

9. $(1 + 2i)^3$

T: $-11 - 2i$

10. $4i^{10}$

I: $-14i$

11. $(5i^5)(6i^{11})$

A: -40

Q: -4

R: $-8i\sqrt{15}$

F: $30i$

C: 30

W: $8i\sqrt{15}$

$\frac{\quad}{10}$
 $\frac{\quad}{6}$
 $\frac{\quad}{1}$
 $\frac{\quad}{9}$
 $\frac{\quad}{3}$
 $\frac{\quad}{7}$
 $\frac{\quad}{11}$
 $\frac{\quad}{4}$
 $\frac{\quad}{2}$
 $\frac{\quad}{8}$
 $\frac{\quad}{5}$

"What do you get from a pampered cow?"

Simplify the following expressions. The answer to each problem will match a letter that will allow you to figure out the joke.

1. $\frac{8}{i}$

R: $-\sqrt{6} + 3i$

2. $\frac{-4}{3i}$

L: $\frac{3 + 6i}{5}$

3. $\frac{5i}{10i^2}$

E: $\frac{34 + 22i}{41}$

4. $\frac{3}{1 - 2i}$

S: $\frac{\sqrt{6} - 3i}{5}$

5. $\frac{-3i}{2 + 3i}$

O: $\frac{4i}{3}$

6. $\frac{2 + 5i}{3 - i}$

A: $\frac{3 - 6i}{-3}$

7. $\frac{6 - 2i}{4 - 5i}$

K: $\frac{1 + 17i}{10}$

8. $\frac{\sqrt{3}}{\sqrt{2} + i\sqrt{3}}$

M: $\frac{2\sqrt{2} - 2i\sqrt{3}}{5}$

9. $\frac{2}{\sqrt{2} + \sqrt{-3}}$

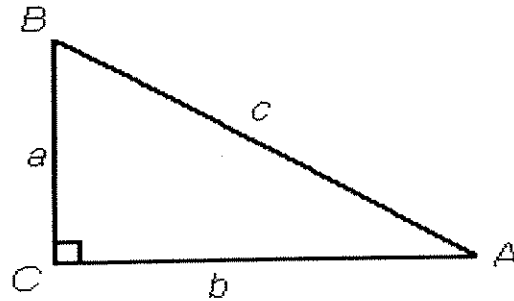
D: $\frac{-i}{2}$

8 1 2 5 4 7 3 9 5 4 6

Who were the first people to invent a plane that couldn't fly?

<p>Pythagorean Theorem</p> $a^2 + b^2 = c^2$ <p>Used for finding missing sides on right triangles</p>	<p>The sum of all angles in a triangle = 180°</p> <p>For right triangles you have one 90° angle, and the remaining two angles must also add to 90°.</p>	<p>Trigonometric Identities</p> $\sin \theta = \frac{\text{opp}}{\text{hyp}}$ $\cos \theta = \frac{\text{adj}}{\text{hyp}}$ $\tan \theta = \frac{\text{opp}}{\text{adj}}$
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Refer to the right triangle shown. Solve for all missing sides and angles using the information above for right triangles. (Angle C = 90°) Round answers to one decimal place.



1. $A = 30^\circ, c = 10$

R. $B = \underline{\hspace{2cm}}^\circ$

G. $a = \underline{\hspace{2cm}}$

S. $b = \underline{\hspace{2cm}}$

3. $A = 29.1^\circ, a = 13.5$

O. $B = \underline{\hspace{2cm}}^\circ$

W. $b = \underline{\hspace{2cm}}$

R. $c = \underline{\hspace{2cm}}$

2. $B = 72^\circ, a = 5$

H. $A = \underline{\hspace{2cm}}^\circ$

N. $b = \underline{\hspace{2cm}}$

E. $c = \underline{\hspace{2cm}}$

4. $c = 13, b = 5$

T. $A = \underline{\hspace{2cm}}^\circ$

R. $B = \underline{\hspace{2cm}}^\circ$

B. $a = \underline{\hspace{2cm}}$

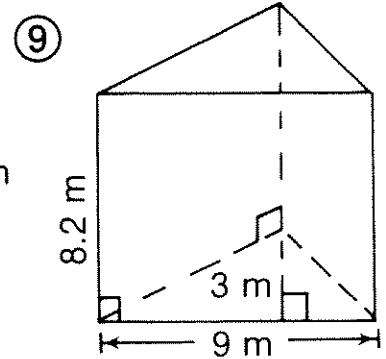
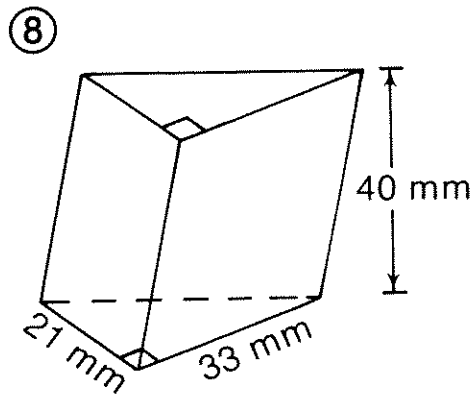
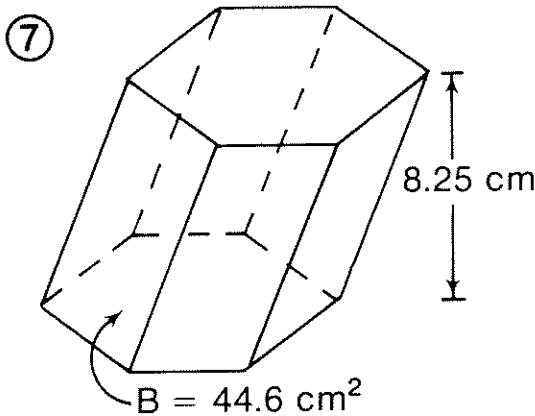
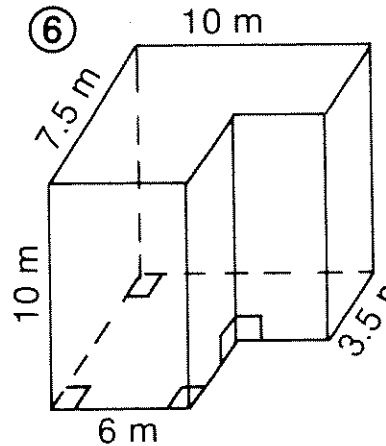
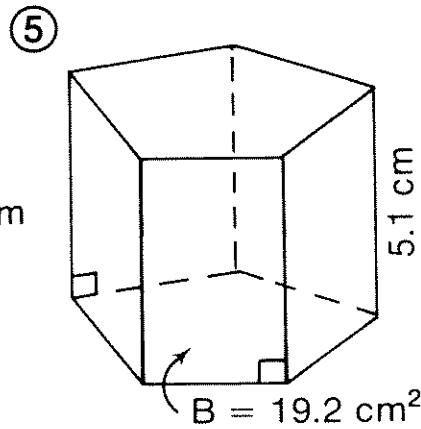
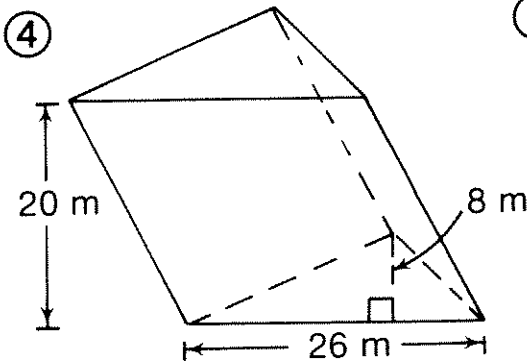
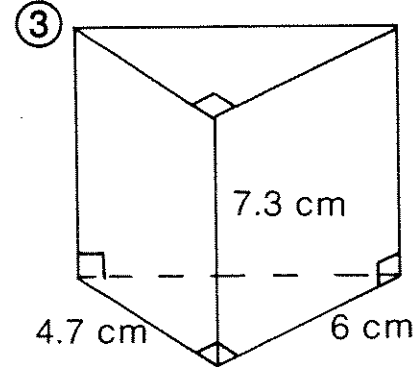
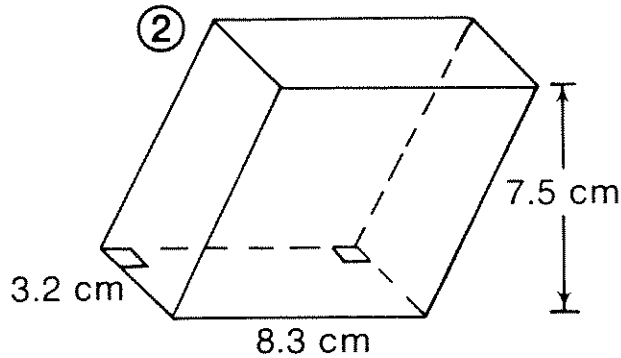
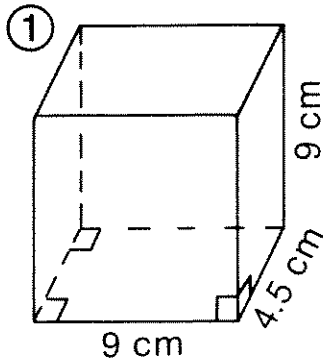
$\overline{24.3}$ $\overline{22.6}$ $\overline{60.9}$ $\overline{15.4}$ $\overline{5}$ $\overline{12}$ $\overline{27.8}$ $\overline{60.9}$ $\overline{67.4}$ $\overline{18}$ $\overline{16.2}$ $\overline{60}$ $\overline{8.6}$



What Do You Call It When A Bull Eats A Bomb?



Figure out the VOLUME of each prism and find your answers in the rectangle below. Cross out each box containing a correct answer. When you finish, there will be 5 boxes not crossed out. Print the letters from these boxes in the boxes at the bottom of the page.

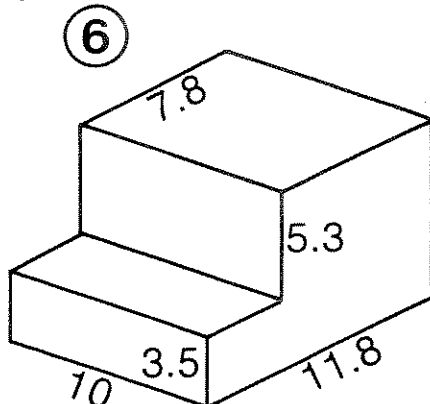
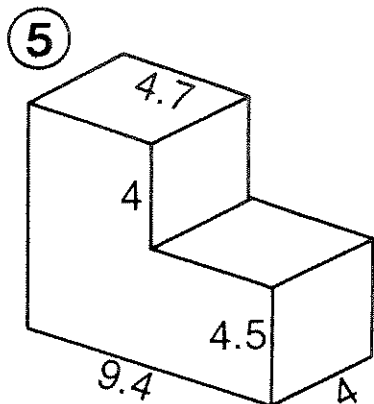
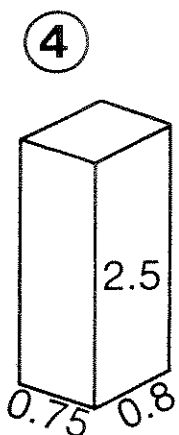
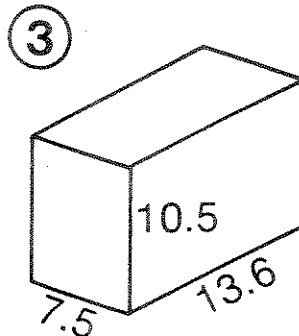
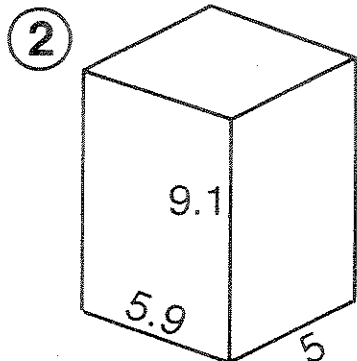
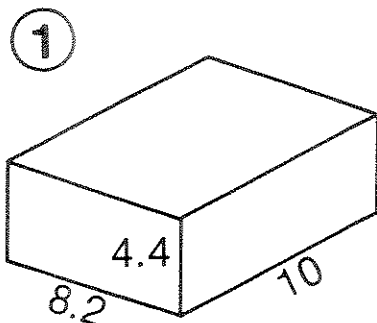


CO	WS	GR	AB	IG	BO	OM
102.93 cm ³	2080 m ³	110.7 m ³	117.7 m ³	97.92 cm ³	199.2 cm ³	9150 mm ³
BL	IN	OW	AB	HO	LE	UP
590 m ³	369.5 cm ³	364.5 cm ³	1050 m ³	13,860 mm ³	91.82 cm ³	367.95 cm ³

How does an ESP expert send his mail?

Do any exercise below. Find your answer in the answer column and notice the letter next to it. Write this letter in each box that contains the number of that exercise.

In the first six exercises, find the volume of the figure. All dimensions are in centimeters.



- ⑦ What is the volume of a cube whose side measures 18 mm?
- ⑧ How many cubic meters of earth are needed to fill a hole in the shape of a rectangular solid with dimensions of 23 meters, 38 meters, and 4.5 meters?
- ⑨ A swimming pool is 20 meters long and 12 meters wide. What volume of water does the pool hold if the average depth of water is 1.75 meters?

- ⓧ 3933 m³
 Ⓜ 510 m³
 ⓔ 1071 cm³
 Ⓢ 1.54 m³
 Ⓟ 826.4 cm³
 Ⓟ 3450 kg
 ⓗ 360.8 cm³
 Ⓢ 3360 kg
 Ⓜ 420 m³
 ⓐ 244.4 cm³
 Ⓛ 5832 mm³
 ⓐ 6432 mm³
 Ⓒ 251.5 cm³
 Ⓝ 268.45 cm³
 Ⓜ 1.25 cm³
 Ⓣ 1.4 m³
 Ⓚ 353.8 cm³
 Ⓒ 3743 m³
 Ⓦ 1.5 cm³

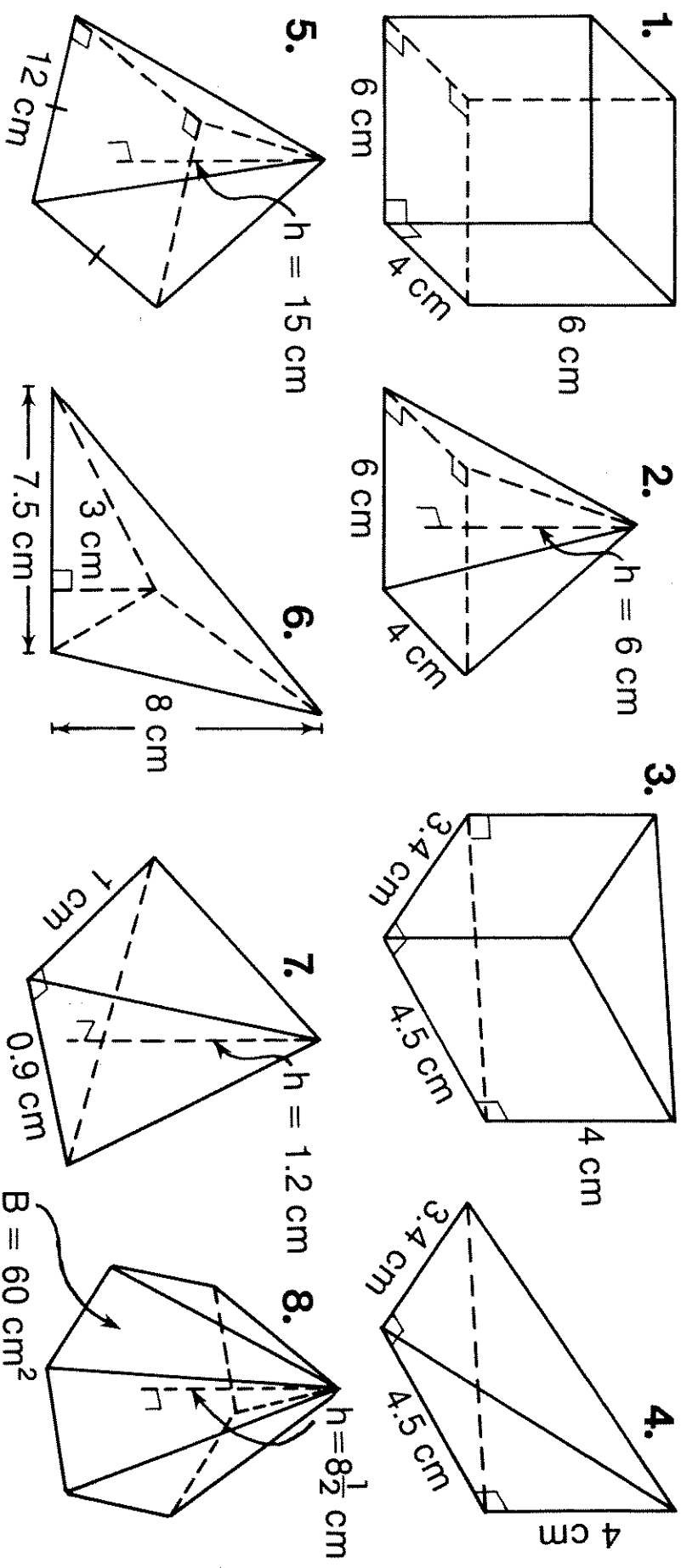
A concrete patio is 5 meters long, 3.5 meters wide, and 8 centimeters thick.

- ⑩ How many cubic meters of concrete were needed to build the patio?
- ⑪ Concrete has a mass of about 2400 kilograms per cubic meter. About how many kilograms of concrete were needed to build the patio?

4	7	10	1	5	11	7	8	10	1	11	3	2	11	3	11	10	5	9	6
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What Should You Call A Man With A Clamp?

TO ANSWER THIS QUESTION: Find the VOLUME of each prism or pyramid and circle your answers in the answer list. When you finish, arrange the letters in order from the letter of the smallest correct answer to the letter of the largest correct answer. Write the letters in this order in the boxes at the bottom of the page.



- | | | | | |
|--------------------------|--------------------------|-------------------------|--------------------------|--------------------------|
| (R) 810 cm ³ | (N) 3.38 cm ³ | (E) 48 cm ³ | (V) 10.2 cm ³ | (M) 0.15 cm ³ |
| (S) 30.6 cm ³ | (A) 0.18 cm ³ | (T) 700 cm ³ | (E) 124 cm ³ | (U) 170 cm ³ |
| (G) 144 cm ³ | (Y) 720 cm ³ | (H) 160 cm ³ | (I) 30 cm ³ | (T) 38 cm ³ |

LETTER OF SMALLEST
CORRECT ANSWER



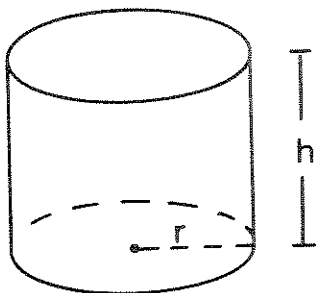
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LETTER OF LARGEST
CORRECT ANSWER



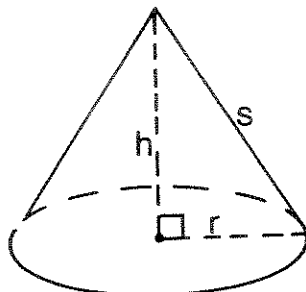
Solid Fun

Given under each figure are the formulas for its volume (V) and surface area (S). Use the appropriate formula to do any exercise below (use $\pi \doteq 3.14$). Circle the letter of the correct answer. Write this letter in each box at the bottom of the page that contains the number of that exercise.



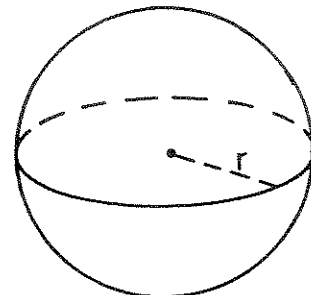
$$V = \pi r^2 h$$

$$S = 2\pi r(r+h)$$



$$V = \frac{1}{3} \pi r^2 h$$

$$S = \pi r(r+s)$$



$$V = \frac{4}{3} \pi r^3$$

$$S = 4\pi r^2$$

- ① Find the volume of a cylinder if $r = 4$ cm, $h = 10$ cm.
(R) 502.4 cm³ (S) 516.4 cm³
- ② Find the surface area of a cylinder if $r = 4$ cm, $h = 10$ cm.
(I) 351.68 cm² (A) 349.58 cm²
- ③ Find the volume of a cone if $r = 6$ cm, $h = 8$ cm.
(T) 310.54 cm³ (E) 301.44 cm³
- ④ Find the surface area of a cone if $r = 6$ cm, $h = 8$ cm, $s = 10$ cm.
(S) 301.44 cm² (D) 290.44 cm²
- ⑤ Find the volume of a sphere if $r = 6$ mm.
(H) 904.32 mm³ (L) 912.42 mm³
- ⑥ Find the surface area of a sphere if $r = 6$ mm.
(P) 412.26 mm² (F) 452.16 mm²
- ⑦ Find the volume of a cylinder if $r = 1.5$ m, $h = 4$ m.
(T) 29.16 m³ (N) 28.26 m³
- ⑧ Find the surface area of a cylinder if $r = 1.5$ m, $h = 4$ m.
(G) 50.21 m² (B) 51.81 m²
- ⑨ Find the volume of a cone if $r = 0.5$ dm, $h = 1.2$ dm.
(P) 0.415 dm³ (M) 0.314 dm³
- ⑩ Find the surface area of a cone if $r = 0.5$ dm, $h = 1.2$ dm, $s = 1.3$ dm.
(K) 2.826 dm² (D) 2.906 dm²
- ⑪ Find the volume of a sphere that has a diameter of 40 km.
(W) 30,463 $\frac{1}{3}$ km³ (C) 33,493 $\frac{1}{3}$ km³
- ⑫ Find the surface area of a sphere that has a diameter of 40 km.
(O) 5024 km² (A) 5048 km²

11	5	2	11	10	3	7	4	11	12	9	3	6	1	12	9	8	1	12	10	3	7	5	12	9	3	4
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