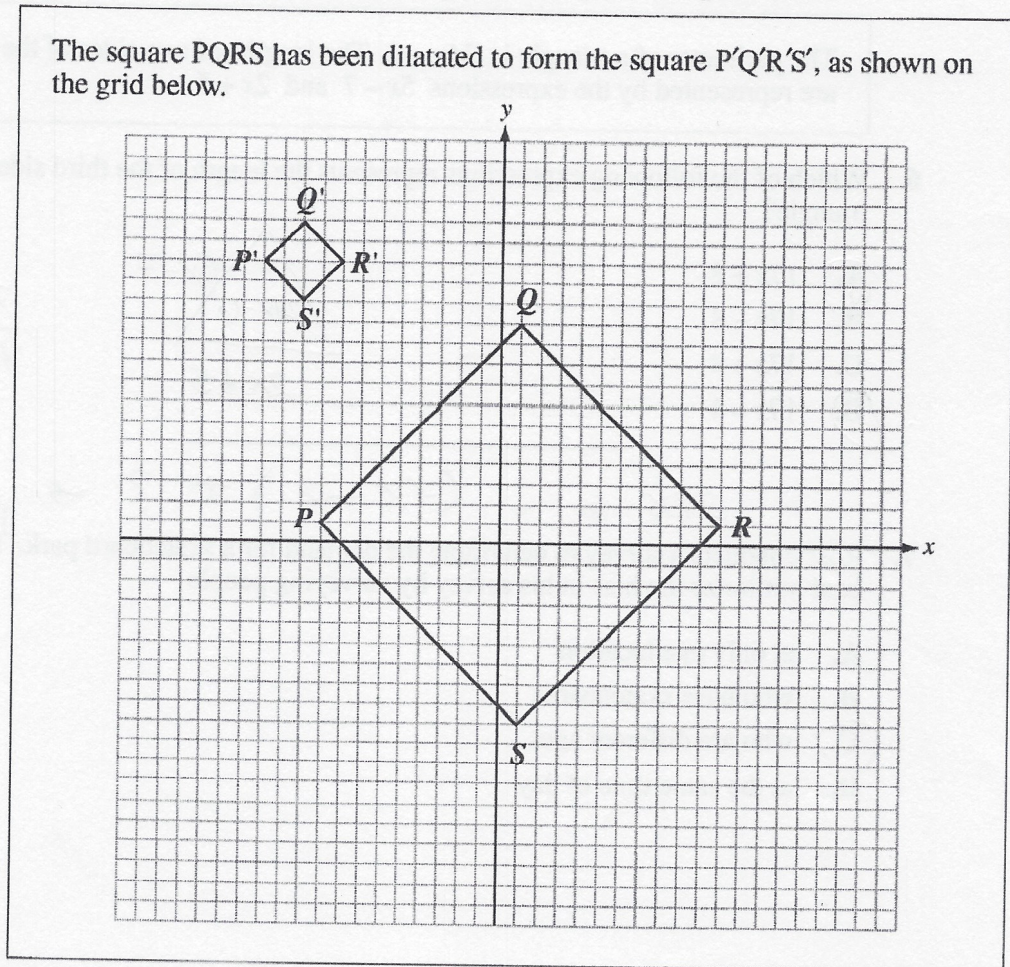


Use the following information to answer question 8.

The square PQRS has been dilated to form the square P'Q'R'S', as shown on the grid below.



8. What is the scale factor of the dilatation shown above?

- A.  $\frac{1}{6}$
- B.  $\frac{1}{5}$
- C. 5
- D. 6

• Translate 1 unit to the left

•  $Q-S = 20$       $\frac{4}{20} = \frac{1}{5}$

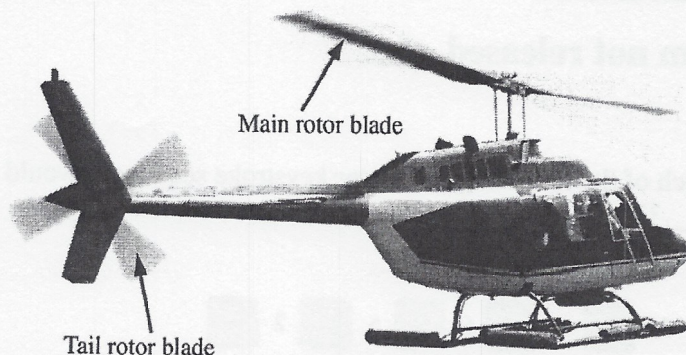
•  $Q'-S' = 4$

so scale factor of the "dilated" square is

$\frac{20}{4}$

Use the following information to answer question 13.

The tail rotor blade of the helicopter shown below rotates 4 times for every 1 main rotor blade rotation.



13. How many times will the helicopter's main rotor blade rotate if its tail rotor blade rotates 600 000 000 times?

- A.  $1.5 \times 10^8$
- B.  $1.5 \times 10^9$
- C.  $2.4 \times 10^8$
- D.  $2.4 \times 10^9$

Does not apply to us

Use the following information to answer question 19.

A student completed the following four steps to solve the equation  $\frac{x}{40} + \frac{x}{60} = 1$ . However, in one of the steps the student makes a mistake.

Step 1  $120\left(\frac{x}{40} + \frac{x}{60}\right) = 1$

Step 2  $\frac{120x}{40} + \frac{120x}{60} = 1$

Step 3  $3x + 2x = 1$

Step 4  $5x = 1$

Solution  $x = \frac{1}{5}$

$$\frac{60x + 40x}{2400} = 1$$

$$\frac{100x}{2400} = 1$$

19. In which step was the mistake made in solving the equation?

- A. Step 1
- B. Step 2
- C. Step 3
- D. Step 4

$$\frac{2400}{100} = x = \frac{2400}{10}$$

$$\boxed{x = 240}$$

20. What is the value of the expression  $2x^2 - 3x + 2x - 3$  if  $x = 8$ ?

- A. 53
- B. 85
- C. 101
- D. 117

$$2(8)^2 - 3(8) + 2(8) - 3$$

$$2(64) - 24 + 16 - 3$$

$$128 - 24 + 16 - 3 = 144 - 27$$

21. If the expression  $-3x + 5 + x - 8 + 5x - 7$  is simplified, which of the following rows identifies the coefficient and the constant?

Row	Coefficient	Constant
A.	3	10
B.	3	-10
C.	-3	10
<input checked="" type="radio"/> D.	-3	-10

$$-3x + x + 5x + 5 - 8 - 7$$

$$3x - 10$$

↓  
constant

↓  
coefficient

Use the following information to answer question 24.

Two friends spent a total of  $3\frac{1}{2}$  hours at various places in a mall as shown below.

Food court	25% of the time
Movie theatre	43% of the time
Shops	29% of the time
Other	3% of the time

24. How many minutes did they spend in the food court?

- A. 11.4 min  
 B. 28.5 min  
 C. 52.5 min  
 D. 81.3 min

$$\frac{7}{2} = 3.5 \text{ hr}$$

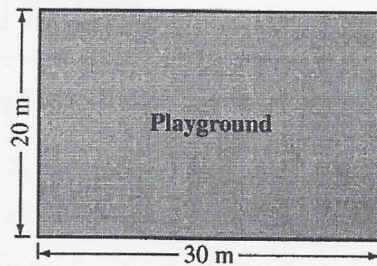
$$(3.5 \text{ hr})(0.25) = 0.875 \text{ hr}$$

$$< 52.5 \text{ min}$$

Items 25 and 26 not released.

Use the following information to answer question 27.

A playground is rectangular in shape with dimensions as shown in the diagram below.



27. By how many metres must both dimensions of the playground be increased in order to double the area of the playground?

- A. 10 m  $30 \times 40$   
 B. 20 m  $40 \times 50$   
 C. 50 m  $70 \times 100$   
 D. 100 m

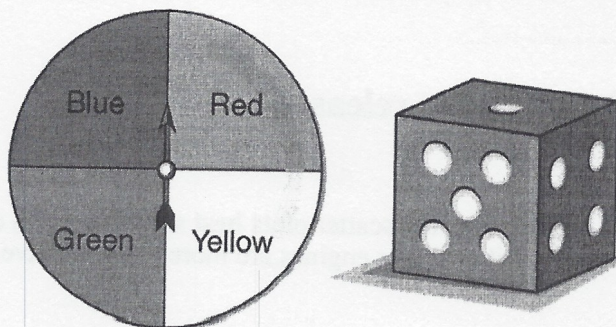
$$20 \times 30 = 600 = A$$

$$\downarrow$$

$$1200$$

Use the following information to answer question 31.

A spinner and a 6-sided number cube are shown below.



31. What is the probability of spinning the colour red and then rolling a 1 or 2?

A.  $\frac{1}{24}$

B.  $\frac{1}{12}$

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

D.  $\frac{1}{6}$

$(\frac{1}{4})$  Blue

$(\frac{1}{4})$  Red

$(\frac{1}{4})$  green

$(\frac{1}{4})$  yellow

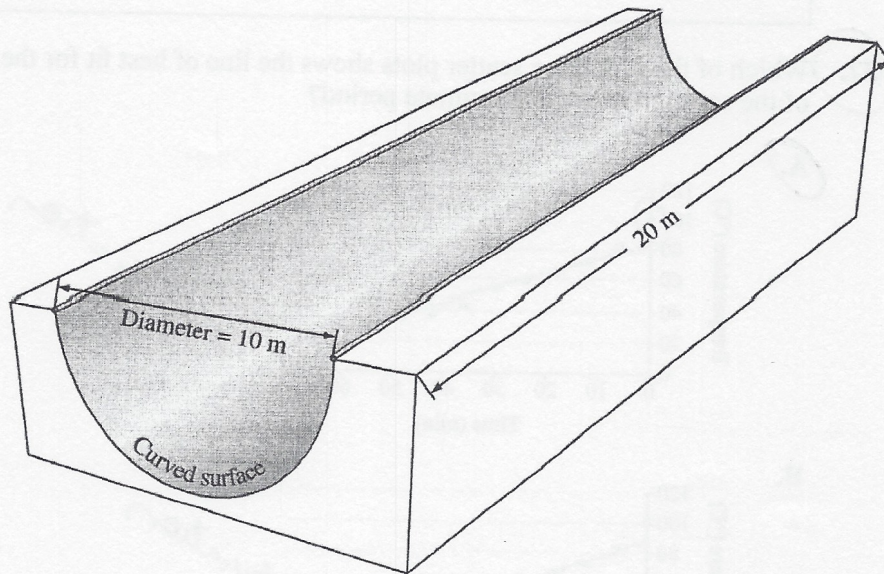
↳

$\frac{1}{4} \left( \frac{1}{6} + \frac{1}{6} \right) = \frac{2}{6}$

so  $\frac{1}{4} \times \frac{2}{6} = \frac{2}{24} = \frac{1}{12}$

Use the following information to answer question 33.

A "half-pipe" such as those used by skateboarders is shown below.



Circumference of a circle =  $\pi d$

33. What is the area of the curved surface of the half-pipe, to the nearest metre?

- A.  $157 \text{ m}^2$
- B.  $200 \text{ m}^2$
- C.  $314 \text{ m}^2$
- D.  $628 \text{ m}^2$

$r = 5 \text{ m}$

$$\begin{aligned} & (2 \times \pi \times 5 \text{ m}) \times 20 \text{ m} \\ & = 10 \pi \text{ m} \times 20 \text{ m} \\ & = 200 \pi \text{ m} = 628 \text{ m}^2 \end{aligned}$$

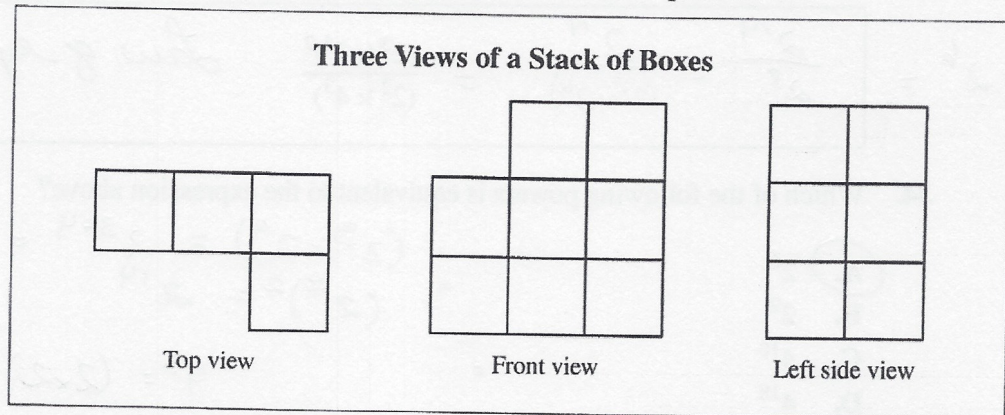
area of cylinder = area of circles +  $(2\pi r \times h)$

~~$2\pi r^2$~~  +  $2\pi r \times h$   
 curved surface

cylinder is opened

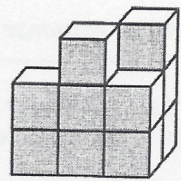
but it is split in half =  $\frac{628}{2} = 314 \text{ m}^2$

Use the following diagram to answer question 35.



35. Which of the following stacks of boxes represents the three views shown above?

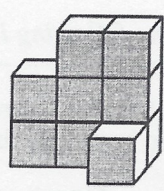
~~A.~~



Front view

*top does not match*

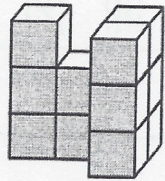
~~B.~~



Front view

*• top view matches  
• front matches  
Left does not*

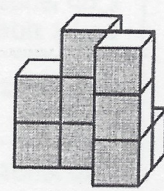
~~C.~~



Front view

*top matches  
left matches  
front does NOT*

**D.**



Front view

36. If  $x = 90$ , then which of the following expressions is a rational number?

**A.**  $\frac{1}{x}$

*any number that can be made into a fraction.*

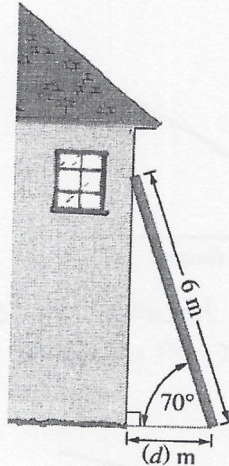
~~B.~~  $\sqrt{x}$

~~C.~~  $\pi x$

~~D.~~  $\tan x^\circ$

Use the following information to answer question 43.

A 6 m ladder leans against a vertical wall of a house at an angle of  $70^\circ$ , as shown below.



43. Which of the following trigonometric ratios can be used to calculate the distance,  $d$ , from the house to the base of the ladder?

A.  $\cos 70^\circ = \frac{d}{6}$

B.  $\cos 70^\circ = \frac{6}{d}$

C.  $\sin 70^\circ = \frac{d}{6}$

D.  $\sin 70^\circ = \frac{6}{d}$

Does not apply  
TO US