# MATHEMATICS
## WORKBOOK

6B

# Answer Key

Name

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## 2 ① Prisms and Cylinders

1

① Base
② Height
③ Lateral Surface
④ Base

2

⑤ parallel
⑥ 9, 3
⑦ 7, 15

3

⑧ triangular prism
⑨ cylinder
⑩ hexiagonal prism

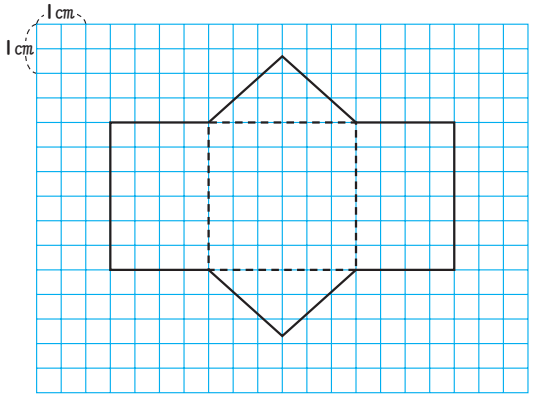
## 3 ① Prisms and Cylinders

1

① 5cm
② circumference of the base
③ 4×3.14＝12.56　　12.56cm

2

④ 3cm
⑤




## 4 ② Pyramids and Cones

1

① Vertex
② Edge
③ Lateral Surface
④ Base

2

⑤ circle
⑥ perpendicular, height

3

⑦ square pyramid
⑧ triangle
⑨ square
⑩ the same

## 5 ② Pyramids and Cones

1

① 12cm

② 6×3.14＝18.84　　18.84cm

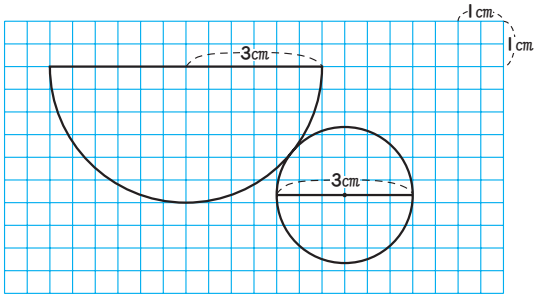
2

③ trianglar pyramid

④ ⓑ

3

⑤




## 6 ③ Looking at Shapes From Directly in Front and Directly Above

1

① rectangle　　③ triangle

② triangle　　④ circle

2

⑤ rectanglar prism

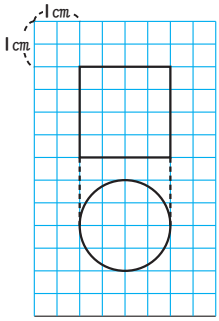
⑥ trianglar pyramid

⑦ hexiagonal prism

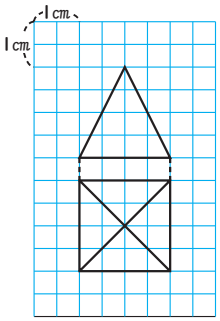
⑧ sphere

3

⑨




⑩




## 7 9. Solid Figures

1

① 5　　② 15

③ rectangle　　④ pentagon

2

⑤ rectanglar prism　　⑥ cylinder

3

⑦ 8cm

⑧ 5cm

⑨ 8cm

⑩ 31.4cm

## 8 9. Solid Figures

1

① 3　　② 9

③ rectangle　　④ triangle

2

⑤ square pyramid

⑥ 5cm

⑦ A

3

⑧ cone

⑨ 31.4

⑩ 20cm（31.4×4÷3.14÷2＝20）

## 9 ① Surface Area of Solid Figures

**1**

① base

② base

**2**

③ quadrilateral

④ $3\times3+3\times(7-3)\div2=15$

15cm²

⑤ $(3+7+5+3)\times6=108$

108cm²

⑥ $108+15\times2=138$ 138cm²

**3**

⑦ $10\times3.14\times12=376.8$

376.8cm²

⑧ $(10\div2)\times(10\div2)\times3.14\times2$
$+376.8=533.8$cm²

533.8cm²

## 10 ① Surface Area of Solid Figures

**1**

① $10\times10\div2\times4+10\times10=300$

② 300cm²

③ $3\times6\div2\times4+3\times3=45$

④ 45cm²

**2**

⑤ $6\times6\times3.14\div2+$
$(6\div2)\times(6\times2)\times3.14=84.78$

⑥ 84.78cm²

**3**

⑦ $12\times2\times3.14\div4\div3.14=6$

⑧ 6cm

⑨ $12\times12\times3.14\div4+$
$(6\div2)\times(6\div2)\times3.14=141.3$

⑩ 141.3cm²

## 11 ② Volume of Solid Figures

**1**

① 3

② Area of the base × Height

③ $5\times4\times3=60$

④ 60cm³

**2**

⑤ $3\times4\div2\times8=48$

⑥ 48cm³

⑦ $6\times6\times3.14\times15=1695.6$

⑧ 1695.6cm³

## 12 ② Volume of Solid Figures

**1**

① Area of the base × Height × $\frac{1}{3}$

**2**

② $\frac{1}{3}$

③ $10\times10\times12\times\frac{1}{3}=400$

④ 400cm³

⑤ $10\times10\times3.14\times24\times\frac{1}{3}$
$=2512$

⑥ 2512cm³

## 13 10. Surface Area and Volume of Solid Figures

**1**

① $(5+6+5)\times 7+6\times 4\div 2\times 2$
$=136$

② $136\,cm^2$

**2**

③ $5\times 4\times 3.14+(4\div 2)\times(4\div 2)$
$\times 3.14\times 2=87.92$

④ $87.92\,cm^2$

⑤ $5\times 5+5\times 6\div 2\times 4=85$

⑥ $85\,cm^2$

**3**

⑦ $(4\div 2)\times(4\div 2)\times 3.14+8\times 8$
$3.14\div 4=62.8$

⑧ $62.8\,cm^2$

## 14 10. Surface Area and Volume of Solid Figures

**1**

① $4\times 3\div 2\times 5=30$

② $30\,cm^3$

**2**

③ $(10\div 2)\times(10\div 2)\times 3.14\times 9$
$\times\frac{1}{3}=235.5$

④ $235.5\,cm^3$

⑤ $3\times 3\times 4\times\frac{1}{3}=12$

⑥ $12\,cm^3$

**3**

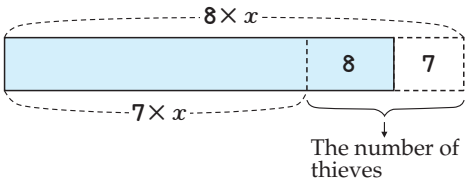
⑦ $(10\div 2)\times(10\div 2)\times 3.14$
$=78.5$
$628\div 78.5=8$

⑧ $8\,cm$

## 15 The Thief Who Stole Rolls of Cloth

The number of thieves : 15

The number of rolls of cloth : 113




$8\times 15-7=113$
(or $7\times 15+8=113$)

## 16 11. The Number of Cases

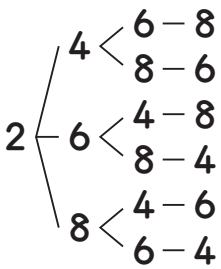
**1**

① 4, 6, 8

② 6

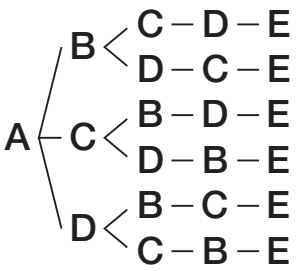
③ 6

④ 24




**2**

⑤ 24




$6\times 4=24$

## 17 11. The Number of Cases

**1**

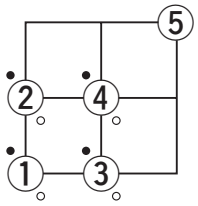
① 2

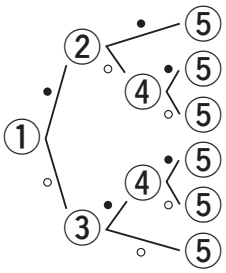
② 2

③ 8

**2**

④ 6



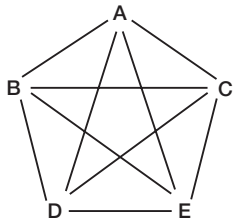

## 18 11. The Number of Cases

**1**

① B, C, D, E

② A, C, D, E

③ 10




**2**

④ 6

| | Class A | Class B | Class C | Class D |
|---|---|---|---|---|
| Class A | | A·B | A·C | A·D |
| Class B | ~~B·A~~ | | B·C | B·D |
| Class C | ~~C·A~~ | ~~C·B~~ | | C·D |
| Class D | ~~D·A~~ | ~~D·B~~ | ~~D·C~~ | |

A·B is the sames as B·A.

## 19 Shopping

**1** 3000yen

$(350+400)\times2\times2$

$=750\times4=3000$

**2** 3600yen

$(600+1000)\times\frac{3}{2}+1200$

$=1600\times\frac{3}{2}+1200$

$=2400+1200=3600$

## 20 Check(4)

**1**

① hexagon

② hexagon prism

③ GHIJKL

④ 6

**2**

⑤ $(12+4)\times3\div2\times7=168$

⑥ $168\text{cm}^3$

⑦ $(12+5+4+5)\times7+$
$(12+4)\times3\div2\times2=230$

⑧ $230\text{cm}^2$

**3**

⑨ $3\times3\times3.14\times3\times\frac{1}{3}=37.68$
$3\times3\times3.14\times4=113.04$
$37.68+113.04=150.72$

⑩ $150.72\text{cm}^3$

## 21 ① Tables Representing Average and Variation

**1**

① total, number

② (23＋32＋37＋26＋17)÷5
＝27　27

③ (36＋28＋30＋24＋21＋20)
÷6＝26.5　26.5

④ Group A

**2**

⑤ (137.9＋146.6＋143.1＋
130.7＋155.2)÷5＝142.7
142.7cm

⑥ (148.9＋129.7＋145.5＋
138.2＋151.4＋147.3)÷6
＝143.5
143.5cm

⑦ the girls

## 22 ① Tables Representing Average and Variation

**1**

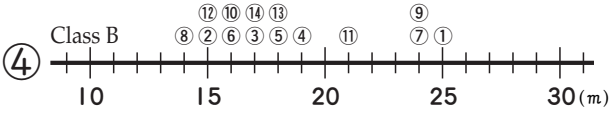
① 50, 51, 52, 53

② 47, 48, 49

③ 47, 48, 49, 50

**2**

④




⑤ class A

| Distance (m) | Number of people |
|---|---|
| More than or equal to / Less than 10～15 | 2 |
| 15～20 | 5 |
| 20～25 | 5 |
| 25～30 | 3 |
| Total | 15 |

⑥ class B

| Distance (m) | Number of people |
|---|---|
| More than or equal to / Less than 10～15 | 1 |
| 15～20 | 9 |
| 20～25 | 3 |
| 25～30 | 1 |
| Total | 14 |

## 23 ① Tables Representing Average and Variation

◆

①

Weight of Boys in Class A of the Sixth Grade

| Weight (kg) (More than or equal to / Less than) | Number of people |
|---|---|
| 30～32 | 2 |
| 32～34 | 3 |
| 34～36 | 4 |
| 36～38 | 6 |
| 38～40 | 2 |
| 40～42 | 2 |
| 42～44 | 1 |
| Total | 20 |

② 36～38

③ 30%(6÷20＝0.3)

④ 3 boys

⑤ 15%(3÷20＝0.15)

⑥ 34～36

⑦ 12～15

## 24 ② Histograms

**1**

① Histogram

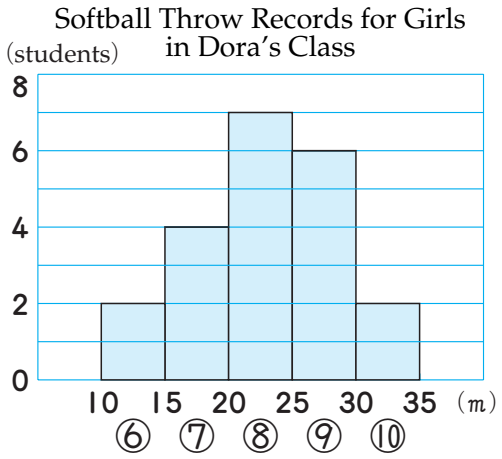
② 140～145

③ 15 students

④ 12 students

⑤ 39 students

**2**



## 25 ③ Cumulative Total

**1**

① 3＋2＋3＋2＋2＝12

② 12 carpenters

③ 12÷5＝2.4

④ 2.4 carpenters

⑤ 12÷3＝4

⑥ 4 carpenters

**2**

⑦ 36÷20＝1.8

⑧ 1.8 students

**3**

⑨ 24.9×30＝747

⑩ 747 people

## 26 ④ Whole and Part

◆

① 306÷627＝0.4880…

② 48.8％

③ 9,010÷18,463＝0.4880…

④ 48.8％

⑤ 197,392÷404,046＝0.4885…

⑥ 48.9％

⑦ 841×0.488＝410.408

⑧ 410 students

## 27 12. How to Analyze Data

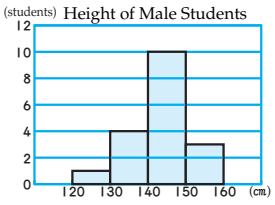
**1**

①

Height of Male Students

| Height (cm) (More than or equal to / Less than) | Number of students (students) |
|---|---|
| 120～130 | 1 |
| 130～140 | 4 |
| 140～150 | 10 |
| 150～160 | 3 |

②




③ 140～150

④ 13÷18＝0.722…

⑤ 72％

**2**

⑥ 889÷7＝127

⑦ 127 people

## 28 13. Units of Measurement

**1**

① g　② kg

③ mm　④ $m^2$

**2**

⑤ cm

⑥ 100

⑦ km

**3**

⑧ 0.23 m　⑨ 0.4 cm

⑩ 2600 m　⑪ 0.32 km

⑫ 7500 mm　⑬ 65,000 cm

## 29 13. Units of Measurement

**1**

| Length of a side | 1 cm | 1 m | ② 10 m | 100 m | 1 km |
|---|---|---|---|---|---|
| Area of square | ① 1 cm² | 1 m² | 1 a | ③ 1 ha | ④ 1 km² |

10,000 times ⑤ 100 times ⑥ 100 times ⑦ 100 times

1,000,000 times

**2**

⑧ $cm^2$

⑨ $km^2$

⑩ $m^2$

**3**

⑪ 7600000 $m^2$

⑫ 90000 $cm^2$

⑬ 14000 $m^2$

⑭ 4 a

⑮ 25 $km^2$

## 30 13. Units of Measurement

**1**

| Length of a side | 1 cm | — | ② 10 cm | 1 m |
|---|---|---|---|---|
| Volume of cube | ① 1 $cm^3$ 1 mℓ | 100 $cm^2$ 1 dℓ | 1000 $cm^3$ ③ 1 ℓ | ④ 1 $m^3$ 1 kℓ |

⑤ 100 times ⑥ 10 times ⑦ 1000 times

**2**

⑧ ℓ

⑨ kℓ ($m^3$)

⑩ mℓ ($cm^3$)

**3**

⑪ 0.64 ℓ

⑫ 2.8 kℓ

⑬ 0.9 $m^3$

⑭ 470 ℓ

⑮ 780 mℓ

## 31 13. Units of Measurement

**1**

| Unit of volume | 1 $cm^3$ 1 mℓ | 100 $cm^2$ 1 dℓ | 1000 $cm^3$ 1 ℓ | 1 $m^3$ 1 kℓ |
|---|---|---|---|---|
| Weight of water corresponding to the volume above | ① 1 g | ② 100 g | ③ 1 kg | ④ 1 t |

⑤ 100 times ⑥ 10 times ⑦ 1000 times

⑧ mg

**2**

⑨ kg

⑩ g

**3**

⑪ 5000 kg

⑫ 600 mg

⑬ 0.125 t

⑭ 1.06 kg

⑮ 0.39 kg

## 32 13. Units of Measurement

**1**

| Kilo (k) | Hecto (h) | Deca (da) | Base unit | Deci (d) | Centi (c) | Milli (m) |
|---|---|---|---|---|---|---|
| ① 1000 | ② 100 | 10 times | 1 | 1/10 | ③ 1/100 | ④ 1/1000 |

**2**

| | Kilo (k) | Hecto (h) | Deca (da) | Base unit | Deci (d) | Centi (c) | Milli (m) |
|---|---|---|---|---|---|---|---|
| Length | ⑤ km | | | m | | ⑥ cm | ⑦ mm |
| Volume | ⑧ kℓ | | | ℓ | ⑨ dℓ | | ⑩ mℓ |
| Weight | ⑪ kg | | | g | | | ⑫ mg |

**3**

⑬ 1000 mℓ

⑭ 1 m

⑮ 1000 kg

⑯ 0.1 ℓ

⑰ 100 mm

⑱ 1 g

⑲ 1000 ℓ

⑳ 10000 m

## 33 13. Units of Measurement

1

① 0.047km　② 3.2mm
③ 0.304km　④ 42195m
⑤ 850m²　⑥ 0.46ha
⑦ 730 a　⑧ 19ha
⑨ 4000cm³　⑩ 8kℓ
⑪ 0.27 ℓ　⑫ 53 ℓ
⑬ 7 g　⑭ 5kg
⑮ 1.9m³　⑯ 2.6 t
⑰ 100 g　⑱ 28dℓ

2

⑲ 120×160=19200
19200m²=192 a
⑳ 192 a

## 34 13. Units of Measurement

1

① km²
② t
③ mg
④ mm
⑤ ℓ
⑥ m

2

⑦ 15×20×9=2700
2700cm³=2.7 ℓ
⑧ 2.7kg

3

⑨ 1.5×3×1.2=5.4
⑩ 5.4 t

## 35 14. Various Graphs

◆

① the number of rice farms
② production
③ 500,000 farms
④ 1,000,000 t
⑤ ・the rice production becomes less than half during 1980 and 2005.
・the number of rice farms has been decreasing since 1980.

## 36 14. Various Graphs

◆

① 2km
② 2 minutes
③ 7:02
④ 4 minutes
⑤ 32 minutes
⑥ 22 minutes
⑦ Station C
⑧ 2 minutes
⑨ Station B
⑩ 7:24

## 37 14. Various Graphs

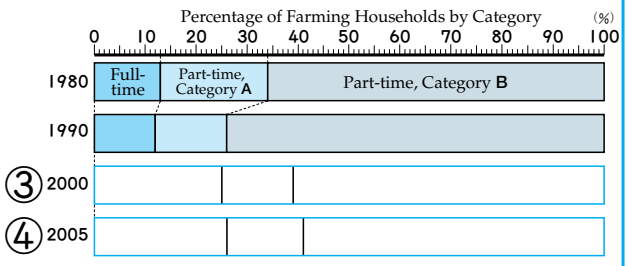
◆

① does not include the point
② 600 yen
③ 600 yen
④ 1200 yen
⑤ 1800 yen
⑥ 3 hours,
3 hours and 30 minutes
⑦ 1, 200, 30

## 38 14. Various Graphs

◆

① 14, 11, 75
② 15, 11, 74




⑤ (omission)

## 39 Check(5)

1

① 0.8, 1, 1.25, 1.05

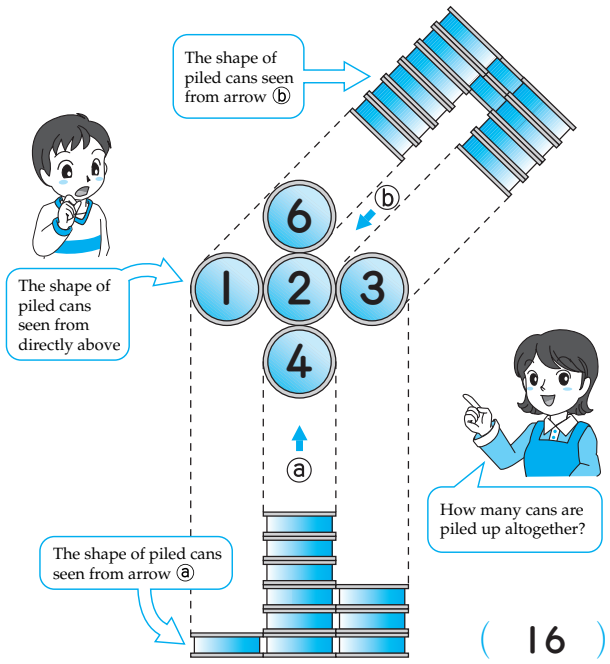
2

② 16 girls
③ 4 girls
④ 25%
⑤ 11～14

3

⑥ ⓓ
⑦ ⓐ
⑧ ⓒ
⑨ ⓑ

## 40 How many cans are there?




( 16 )

## 41 Numbers and Calculations ①

**1**

① 3,210,300

② 21,405,000,000

**2**

③ 3, 4, 0, 7

④ 10, 1, 0.1, 0.01

**3**

⑤ 0.4　⑥ 1.375　⑦ 0.3125

⑧ $\frac{3}{5}$　⑨ $1\frac{4}{5}$　⑩ $2\frac{3}{4}$

**4**

⑪ 24, 48, 72

⑫ 1, 2, 3, 6, 9, 18

⑬ 1, 2, 3, 6

⑭ 9

## 42 Numbers and Calculations ②

**1**

① $\frac{1}{3}$　② $\frac{3}{4}$

③ $\frac{7}{15}$　④ $\frac{5}{8}$

**2**

⑤ 6, 6　⑥ 3, 10

**3**

⑦ $\frac{21}{36}, \frac{10}{36}$　⑧ $\frac{6}{24}, \frac{20}{24}, \frac{9}{24}$

**4**

⑨ 21.2　⑩ 74.4

⑪ 80.14　⑫ 102.62

⑬ 26.5　⑭ 33.9

⑮ 32.56　⑯ 39.49

**5**

⑰ $325 \times 19 + 13 = 6188$
$6188 \div 17 = 364$

⑱ 364

## 43 Numbers and Calculations ③

**1**

① 2.852　② 23.157　③ 168.3

④ 0.63　⑤ 126　⑥ 27

⑦ 0.9　⑧ 180

**2**

⑨ $37.9 \div 0.8 = 47$ R0.3

⑩ 47 bags and 0.3kg left over

## 44 Numbers and Calculations ④

**1**

① $\frac{13}{24}$　② $1\frac{2}{3}$

③ $\frac{3}{20}$　④ $\frac{3}{4}$

⑤ $\frac{3}{8}$　⑥ $1\frac{3}{8}$

⑦ $\frac{4}{5}$　⑧ 2

**2**

⑨ $80 \div \left(1 - \frac{2}{3}\right) = 80 \div \frac{1}{3}$
$= 240$

⑩ 240 sheets

## 45 Numbers and Calculations ⑤

**1**

① $\frac{2}{7}$　② $\frac{3}{4}$　③ $2\frac{1}{4}$　④ $1\frac{1}{5}$

**2**

⑤ $\frac{1}{4}$　⑥ $3\frac{1}{2}$　⑦ $\frac{4}{11}$　⑧ $2\frac{12}{19}$

**3**

⑨ $\frac{9}{14}\times\frac{7}{6}\times\frac{2}{3}=\frac{1}{2}$

⑩ $\frac{12}{5}\times\frac{7}{4}\times\frac{2}{7}=1\frac{1}{5}$

⑪ $\frac{5}{6}\times\frac{9}{5}\times\frac{7}{12}\times\frac{3}{7}=\frac{3}{8}$

**4**

⑫ $\frac{11}{15}+\frac{3}{5}\times\frac{7}{1}=4\frac{14}{15}$

⑬ $\frac{8}{5}\times\frac{19}{8}\div\frac{19}{10}=2$

⑭ $\frac{9}{25}\times\frac{7}{10}\div\frac{7}{50}=1\frac{4}{5}$

## 46 Quantities and Measurements ①

**1**

① 0.4 m　② 300 m
③ 3.4 a　④ 65 ha
⑤ 80 ha　⑥ 3 ℓ
⑦ 250 ℓ　⑧ 9700 kg
⑨ 0.4 t　⑩ 600 mg
⑪ 0.28 m²　⑫ 50000 cm³
⑬ 9 cm²　⑭ 2800 g
⑮ 1.2 kg　⑯ 53 g
⑰ 0.8 ℓ　⑱ 0.9 m³

**2**

⑲ 12 t ＝ 12000 kg
12000 ÷ 63 ＝ 190 R30

⑳ 190 bags

## 47 Quantities and Measurements ②

**1**

① A：560 ÷ 4 ＝ 140
B：620 ÷ 5 ＝ 124

② Train A

**2**

③ Black stone ：300 ÷ 15 ＝ 20
White stone ：360 ÷ 20 ＝ 18

④ Black stone

**3**

⑤ 5 km ＝ 5000 m, 5000 ÷ 20 ＝ 250

⑥ 250 m / min

⑦ 62 × 4 ＝ 248　⑧ 248 km

**4**

⑨ 12 km ＝ 12000 m
12000 ÷ 240 ＝ 50,
8:00 + 50 ＝ 8:50

⑩ 8:50

## 48 Quantities and Measurements ③

**1**

① 3 × 4 ÷ 2 ＝ 6

② 6 cm²

③ (4 + 7) × 6 ÷ 2 ＝ 33

④ 33 cm²

⑤ 20 × 20 + (20 ÷ 2) × (20 ÷ 2) × 3.14 ÷ 2 × 2 ＝ 714

⑥ 714 m²

**2**

⑦ (5 + 3) × 3.14 ÷ 2 + 5 × 3.14 ÷ 2 + 3 × 3.14 ÷ 2 ＝ 25.12

⑧ 25.12 cm

⑨ 4 × 4 × 3.14 ÷ 2 −
(2.5 × 2.5 × 3.14 ÷ 2) −
(1.5 × 1.5 × 3.14 ÷ 2) ＝ 11.775

⑩ 11.775 cm²

## 49 Quantities and Measurements ④

**1**

① $8 \times 25 \times 16 = 3200$

② $3200\text{cm}^3$

③ $3.9 \times 3.6 \times \frac{1}{3} = 4.68$

④ $4.68\text{cm}^3$

⑤ $8 \times 8 \times 3.14 \times 15 = 3014.4$

⑥ $3014.4\text{cm}^3$

**2**

⑦ $2.5 \times 4 \div 2 \times 2 + (4.7 + 2.5 + 4) \times 5 = 66$

⑧ $66\text{cm}^2$

⑨ $(8 \times 6 \div 2 + 3 \times 3 \times 3 \times 3.14 \div 2) \times 2 = 76.26$

$(10 + 8 + 6 \times 3.14 \div 2) \times 5 = 137.1$

$76.26 + 137.1 = 213.36$

⑩ $213.36\text{cm}^2$

## 50 Geometric Figures ①

**1**

① ⓐ, ⓕ, ⓗ

② ⓖ, ⓗ

③ ⓗ

④ ⓑ

⑤ ⓒ, ⓓ

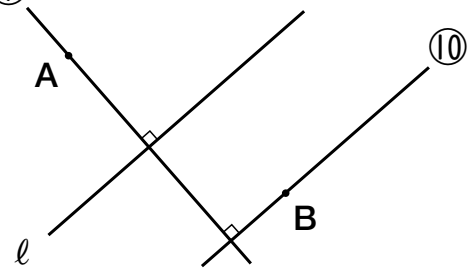
⑥ ⓐ, ⓑ, ⓖ, ⓗ

**2**

⑦ *o*, *q*　　⑧ *p*

**3**

⑨




## 51 Geometric Figures ②

**1**

① pentagonal prism

② Base : pentagon

Lateral surface : rectangle

③ height

**2**

④ triangular prism

⑤ sphere

⑥ hexagonal pyramid

⑦ cylinder

**3**

⑧ cone

⑨ $12 \times 2 \times 3.14 \div 4 = 18.84$

$18.84 \div 3.14 = 6$

⑩ 6cm

## 52 Geometric Figures ③

**1**

① 180°

② 60°

③ radius

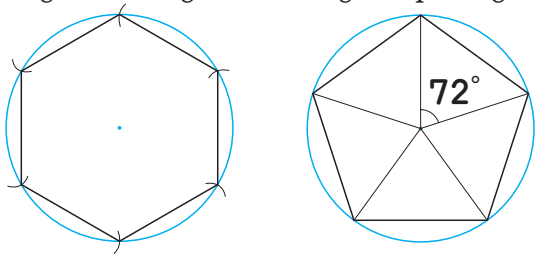
**2**

④ 65°　⑤ 115°　⑥ 60°

⑦ 45°　⑧ 60°

**3**

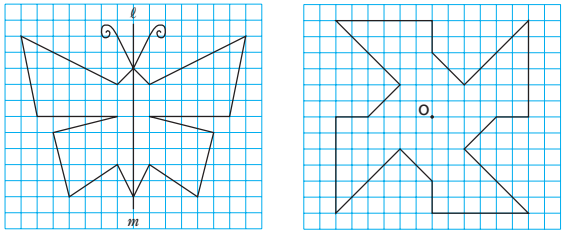
⑨ Regular hexagon　⑩ Regular pentagon



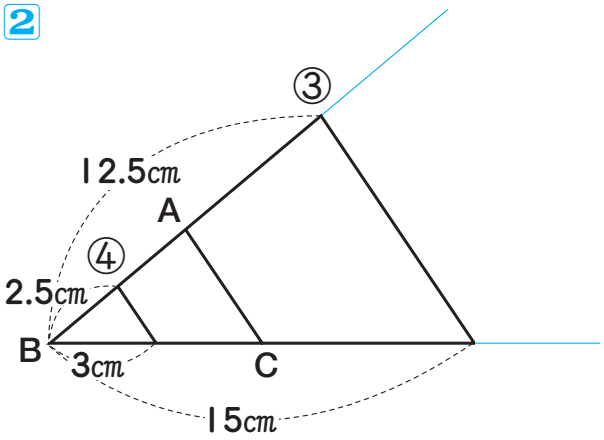
## 53 Geometric Figures ④

**1**

① ② 




**2**




## 54 Quantitative Relations ①

**1**

① 2.2　② 131

③ 6.5　④ $\frac{25}{72}$

**2**

⑤ $x+240\times 8$

⑥ $8\times 5\times x$

**3**

⑦ 3 : 10　⑧ 5 : 16

**4**

⑨ ⓑ, ⓒ

**5**

⑩ $8:5=x:15$

$5x=8\times 15$

$x=8\times 3$

$x=24$　24㎢

## 55 Quantitative Relations ②

**1**

① 20.3%　② 87.5%

③ 150%　④ 225%

**2**

⑤ 40　⑥ 50

⑦ 27　⑧ 80

**3**

⑨ $140\times 0.95=133$

⑩ 133 people

**4**

⑪ $14\div\frac{7}{8}=14\times\frac{8}{7}=16$

⑫ 16㎢

## 56 Quantitative Relations ③

**1**

① (×) $x+y=24$

② (○) $y=\pi x$

③ (◎) $x\times y=20$　$\left(y=\frac{20}{x}\right)$

**2**

④

| $x$ (m) | 1 | 2 | 4 | 5 | 8 | 10 | 12 |
|---|---|---|---|---|---|---|---|
| $y$ (kg) | 0.4 | 0.8 | 1.6 | 2 | 3.2 | 4 | 4.8 |

⑤ proportional relationship

⑥ $y=0.4\times x$

**3**

⑦ $6\times 15=90$

$90\div 10=9$

⑧ 9 ℓ per minute