STAAR®

State of Texas
Assessments of
Academic Readiness

GRADE 4
Mathematics

Administered May 2016

RELEASED

STAAR GRADE 4 MATHEMATICS REFERENCE MATERIALS

PERIMETER

Square			$P = 4s$
Rectangle	$P = l + w + l + w$	or	$P = 2l + 2w$

AREA

Square	$A = s \times s$
Rectangle	$A = l \times w$

Inches

0
1
2
3
4
5
6
7
8
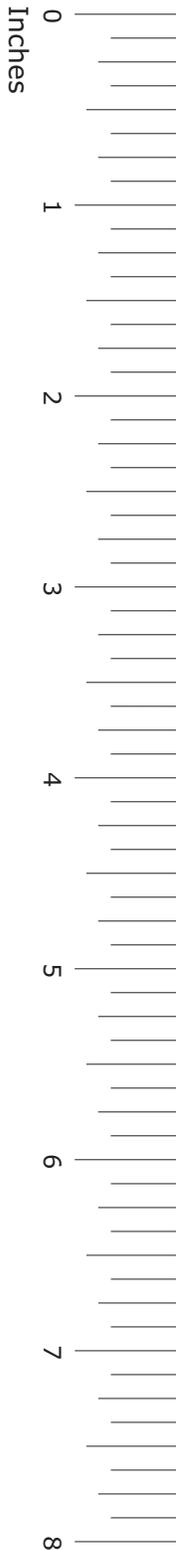
STAAR GRADE 4 MATHEMATICS REFERENCE MATERIALS
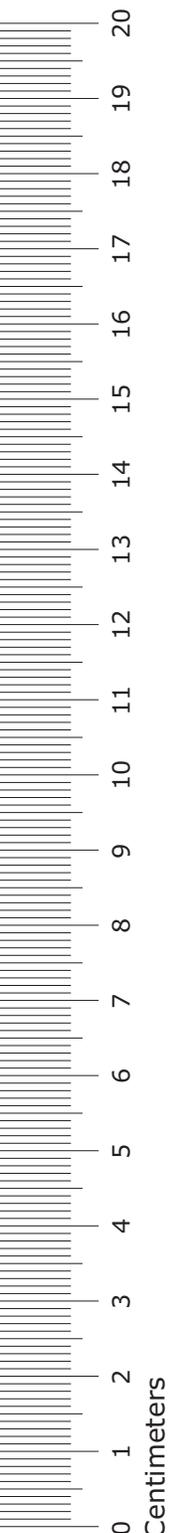
LENGTH

Customary	Metric
1 mile (mi) = 1,760 yards (yd)	1 kilometer (km) = 1,000 meters (m)
1 yard (yd) = 3 feet (ft)	1 meter (m) = 100 centimeters (cm)
1 foot (ft) = 12 inches (in.)	1 centimeter (cm) = 10 millimeters (mm)

VOLUME AND CAPACITY

Customary	Metric
1 gallon (gal) = 4 quarts (qt)	1 liter (L) = 1,000 milliliters (mL)
1 quart (qt) = 2 pints (pt)	
1 pint (pt) = 2 cups (c)	
1 cup (c) = 8 fluid ounces (fl oz)	

WEIGHT AND MASS

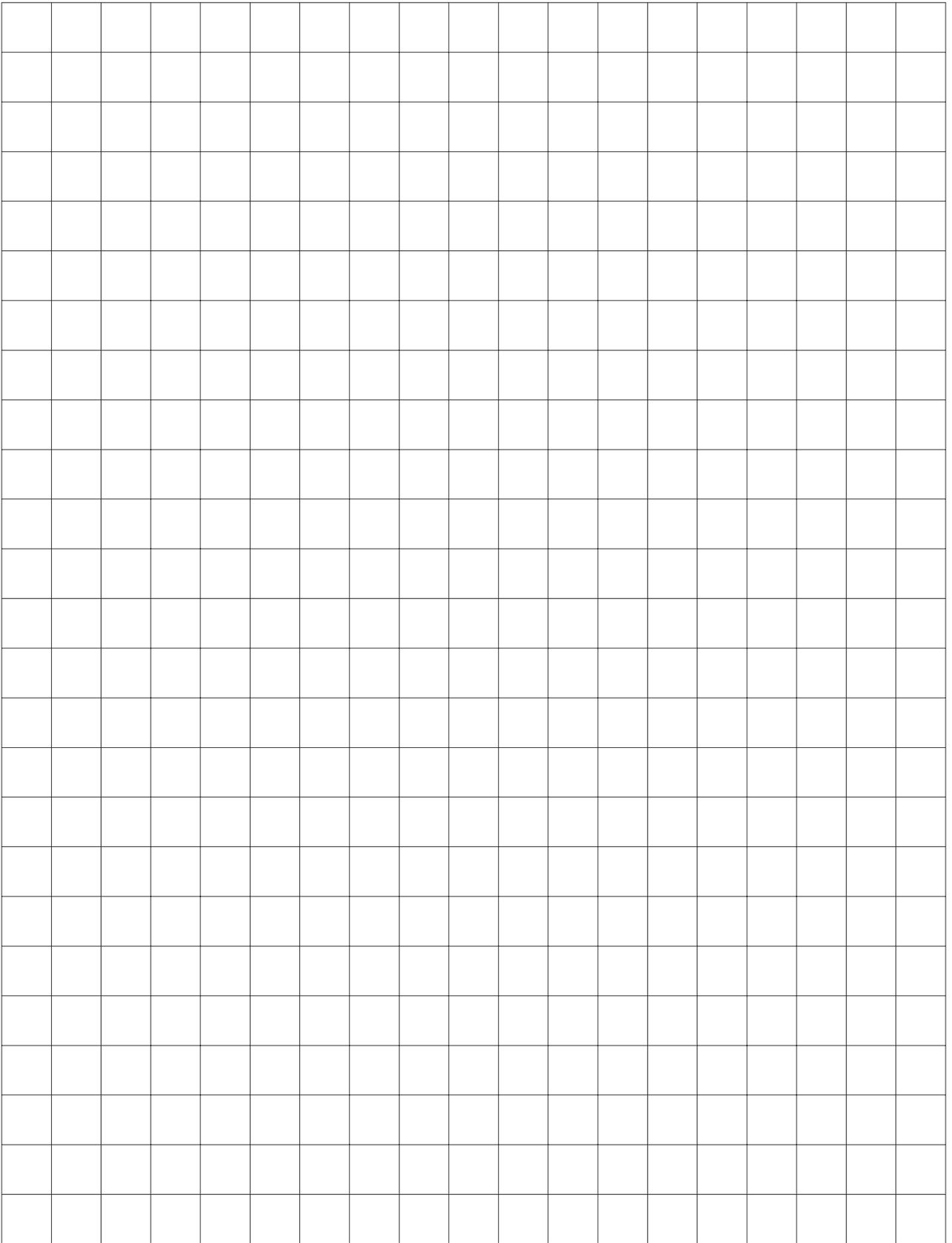| Customary	Metric
1 ton (T) = 2,000 pounds (lb)	1 kilogram (kg) = 1,000 grams (g)
1 pound (lb) = 16 ounces (oz)	1 gram (g) = 1,000 milligrams (mg)

TIME

1 year = 12 months

1 year = 52 weeks

1 week = 7 days

1 day = 24 hours

1 hour = 60 minutes

1 minute = 60 seconds

Centimeters

MATHEMATICS

Read each question carefully. For a multiple-choice question, determine the best answer to the question from the four answer choices provided. For a griddable question, determine the best answer to the question. Then fill in the answer on your answer document.

1 Estelle shaded the model below to represent the height of a building that is 4.8 meters tall.
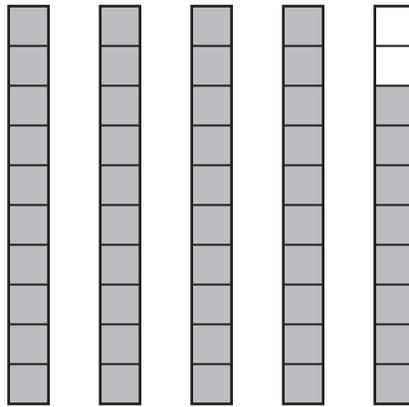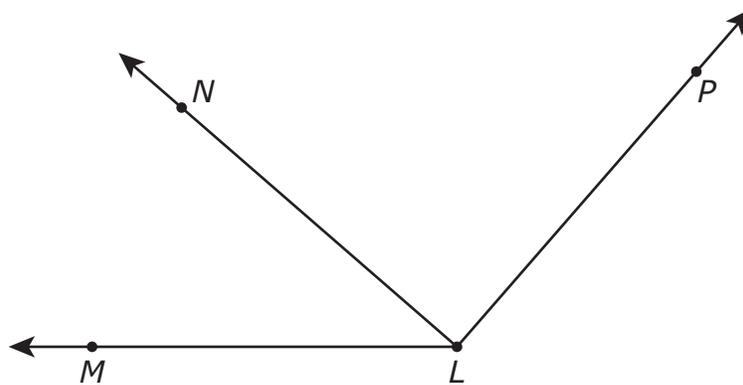
Which fraction represents the height of this building in meters?

A $4\dfrac{8}{10}$

B $\dfrac{48}{50}$

C $4\dfrac{8}{100}$

D $\dfrac{48}{100}$

2 Eric has 158 action figures to put in display cases. Each display case can hold 8 action figures. How many cases does Eric need to hold all his action figures?

F 18

G 20

H 19

J 21

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3 Angle *MLN* has a measure of 41°. Angle *NLP* is a right angle.
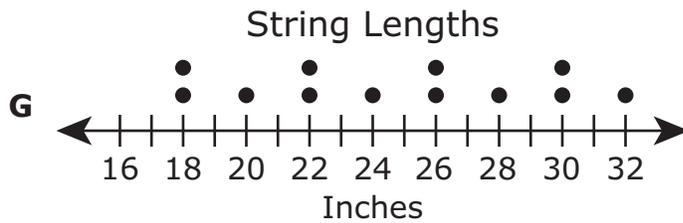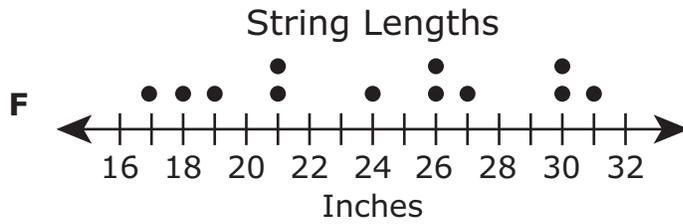

What is the measure of angle *MLP*?

A 82°

B 49°

C 180°

D 131°

4 The list shows the lengths of twelve strings in inches.

26, 30, 19, 21, 24, 26, 18, 31, 27, 21, 17, 29

Which plot represents the data in the list?

String Lengths

F

16 18 20 22 24 26 28 30 32
Inches

String Lengths

G

16 18 20 22 24 26 28 30 32
Inches

String Lengths

H

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

1|8 means 18 inches.

String Lengths

J

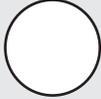| Stem	Leaf
1	7 8 9
2	1 1 4 6 6 7 9
3	0 1

1|8 means 18 inches.

5 A number sentence is shown below.

$$\diamond \times 10 = \bigcirc$$

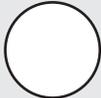Which table shows numbers that make the number sentence true?

A

◇	◯
44	54
66	76
99	109
150	160

C

◇	◯
44	4,400
66	6,600
99	9,900
150	15,000

B

◇	◯
44	440
66	660
99	990
150	1,500

D

◇	◯
44	404
66	606
99	909
150	1,050

6 The fraction $\frac{3}{8}$ can be represented by this expression.

$$\frac{1}{8} + \frac{1}{8} + \boxed{}$$

Which fraction belongs in the $\boxed{}$ to complete the expression?

F $\frac{2}{8}$

G $\frac{3}{8}$

H $\frac{1}{8}$

J $\frac{1}{16}$

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7 A basketball team plays 82 games each year. How many games will the team play in 25 years?
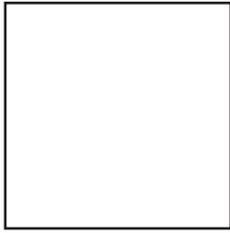
A 1,050

B 2,040

C 2,090

D 2,050

8 Use the ruler provided to measure the length and width of each rectangle to the nearest centimeter.

What is the difference between the perimeters of these rectangles in centimeters?

F 3 cm, because $6 - 3 = 3$

G 2 cm, because $8 - 6 = 2$

H 4 cm, because $16 - 12 = 4$

J 1 cm, because $9 - 8 = 1$

---

9 The table below shows the length of the railway network in each of five countries.

Railway Networks

Country	Length of Railway (meters)
Brazil	28,538,000
France	29,640,000
Italy	20,255,000
Japan	27,182,000
South Africa	20,192,000

Which list shows these countries in order from shortest to longest railway network?

A France, Brazil, Japan, Italy, South Africa

B South Africa, Italy, Japan, Brazil, France

C France, South Africa, Italy, Japan, Brazil

D South Africa, Italy, Japan, France, Brazil

10 A factory makes 400 refrigerators every day. The factory makes 125 more stoves per day than refrigerators. Which equation can be used to find x, the total number of refrigerators and stoves the factory makes in one day?
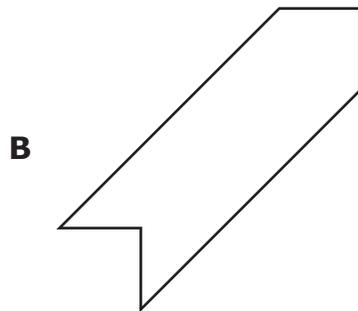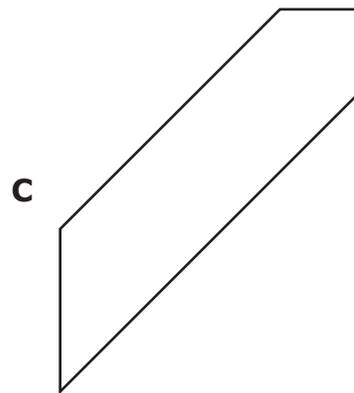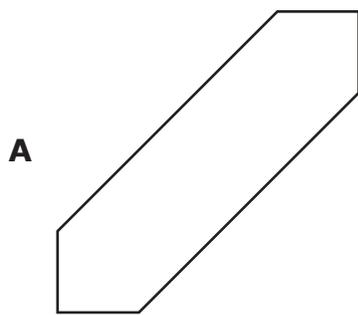
F $x = 400 + 400 + 125$

G $x = 400 + 125$

H $x = 400 + 400 - 125$

J $x = 400 - 125$

---

11 Which figure appears to have exactly 1 line of symmetry?

A

C

B

D

12 Yasmine made waffles for her family.

- $\frac{4}{7}$ of the waffles were blueberry.

- $\frac{1}{7}$ of the waffles were chocolate chip.

- The rest of the waffles did not have blueberries or chocolate chips.

What fraction of the waffles did not have blueberries or chocolate chips?

F $\frac{5}{7}$, because $\frac{4}{7} + \frac{1}{7} = \frac{5}{7}$

G $\frac{12}{7}$, because $\frac{4}{7} + \frac{1}{7} = \frac{5}{7}$ and $\frac{7}{7} + \frac{5}{7} = \frac{12}{7}$

H $\frac{3}{7}$, because $\frac{4}{7} - \frac{1}{7} = \frac{3}{7}$

J $\frac{2}{7}$, because $\frac{4}{7} + \frac{1}{7} = \frac{5}{7}$ and $\frac{7}{7} - \frac{5}{7} = \frac{2}{7}$

13 The frequency table shows the favorite school lunches of some students. The table is missing the information for the number of students who chose a hamburger.

Favorite School Lunches

Lunch Choice	Tally	Frequency
Pizza	卌 卌 卌 卌 卌 卌 II	32
Hamburger		
Chicken	卌 卌 III	13

The number of students who chose a hamburger is half the number of students who chose pizza. How many students chose a hamburger or chicken as their favorite school lunch?

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

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14 Liza drew a figure on the front of her notebook that has two obtuse angles. Which figure could be the one Liza drew?

F Rectangle

G Obtuse triangle

H Parallelogram

J Right triangle

15 The list shows the number of trees Isaiah planted in three years.

- He planted 521 trees in the first year.
- He planted 387 trees in the second year.
- He planted 438 trees in the third year.

Isaiah wants to plant a total of 2,000 trees. How many more trees does Isaiah need to plant?

A 654

B 1,346

C 874

D 764

---

16 Which statement about the number 726,483.19 is true?

F The digit 9 has a value of (9×100).

G The digit 4 has a value of (4×100).

H The digit 8 has a value of (8×0.1).

J The digit 2 has a value of (2×10).

---

17 Sebastian had a rectangular piece of paper that was 90 mm long and 50 mm wide. He cut the paper in half. What is the area of each half of the paper in square millimeters?

A 4,500 square millimeters

B 9,000 square millimeters

C 2,250 square millimeters

D 1,125 square millimeters

18 Which comparison is true?

F $\dfrac{1}{5} < \dfrac{2}{4}$

G $\dfrac{2}{3} < \dfrac{1}{2}$

H $\dfrac{1}{4} < \dfrac{2}{10}$

J $\dfrac{1}{3} < \dfrac{2}{7}$

---

19 A geyser is an underground hot spring that shoots water and steam into the air. At Yellowstone National Park there is a geyser that erupts once every 44 to 125 minutes. If the geyser erupted one day at 1:04 P.M., at which time could the geyser erupt next?
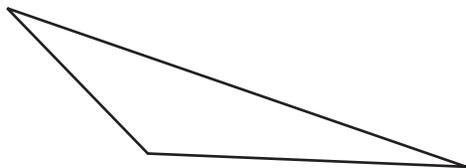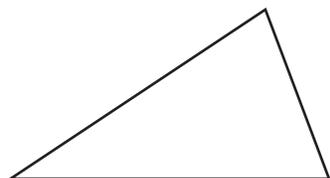
A 1:44 P.M.

B 3:29 P.M.

C 3:05 P.M.

D 1:25 P.M.

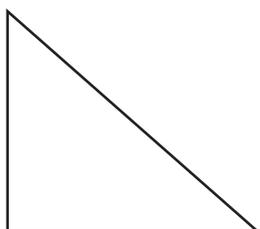**20** Which triangle appears to be an acute triangle?
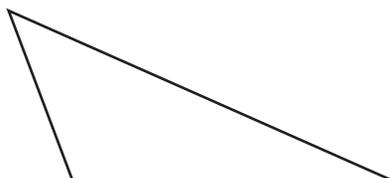
F

G

H

J

---

21 Mark had 45 football cards. Josh had twice as many football cards as Mark. Josh then bought 5 more football cards. Which equation can be used to find f, the number of football cards Josh has now?

A $2 \times 45 + 5 = f$

B $2 \times 45 - 5 = f$

C $2 + 45 \times 5 = f$

D $2 + 45 + 5 = f$

GO ON

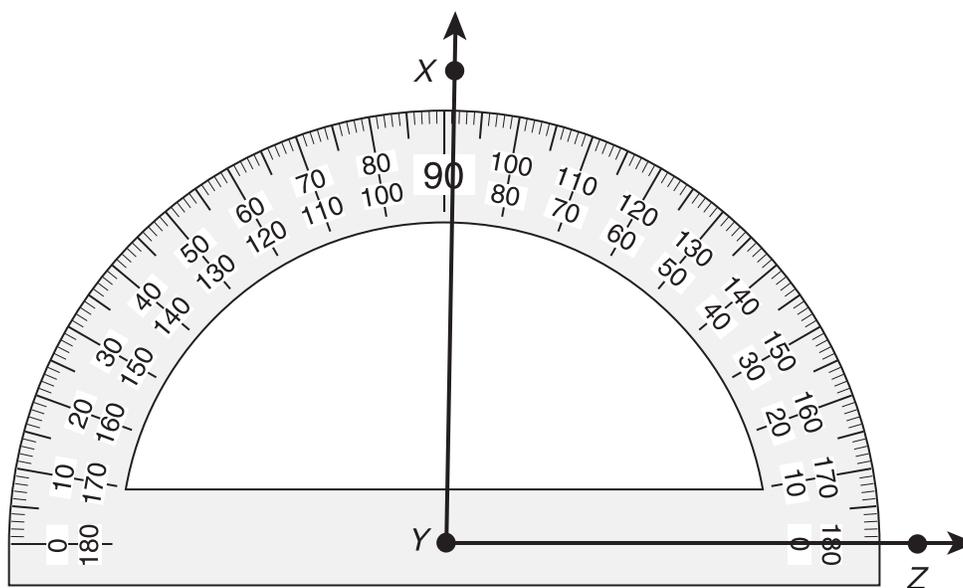**22** Which equation shows an equivalent decimal and fraction?

F $12.09 = 12\frac{9}{10}$

G $12.09 = 12\frac{9}{100}$

H $12.90 = 12\frac{1}{90}$

J $12.90 = 12\frac{90}{10}$

23 What is the measure of angle *XYZ* to the nearest degree?

A 180°

B 109°

C 91°

D 89°

24 A number pattern begins with the values shown.

$$8, \quad 16, \quad 24, \quad 32, \quad \ldots$$

Which table correctly represents the relationship between the position of a number in the pattern and the value of that number?

F

Position	Numerical Expression	Value
1	1 + 8	9
2	2 + 8	10
3	3 + 8	11
4	4 + 8	12

G

Position	Numerical Expression	Value
8	8 + 0	8
16	16 + 0	16
24	24 + 0	24
32	32 + 0	32

H

Position	Numerical Expression	Value
1	1 × 8	8
2	2 × 8	16
3	3 × 8	24
4	4 × 8	32

J

Position	Numerical Expression	Value
8	8 × 1	8
16	16 × 1	16
24	24 × 1	24
32	32 × 1	32

25 Gwen bought an old table. She repaired it and painted it so that it looked new. Then she sold the table. Gwen made this list about what she did.

- Price paid for old table: $10.00
- Cost to repair: $5.00
- Cost to paint: $7.50
- Selling price: $50.00

What was Gwen's profit from selling the table?

A $27.50

B $50.00

C $22.50

D $40.00

---

26 The distance between Henry's house and his school is 648 feet. How many yards are equivalent to 648 feet?

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

27 The distances in meters that four students jumped are modeled below.

Marisol

Benito

Otis

Angie
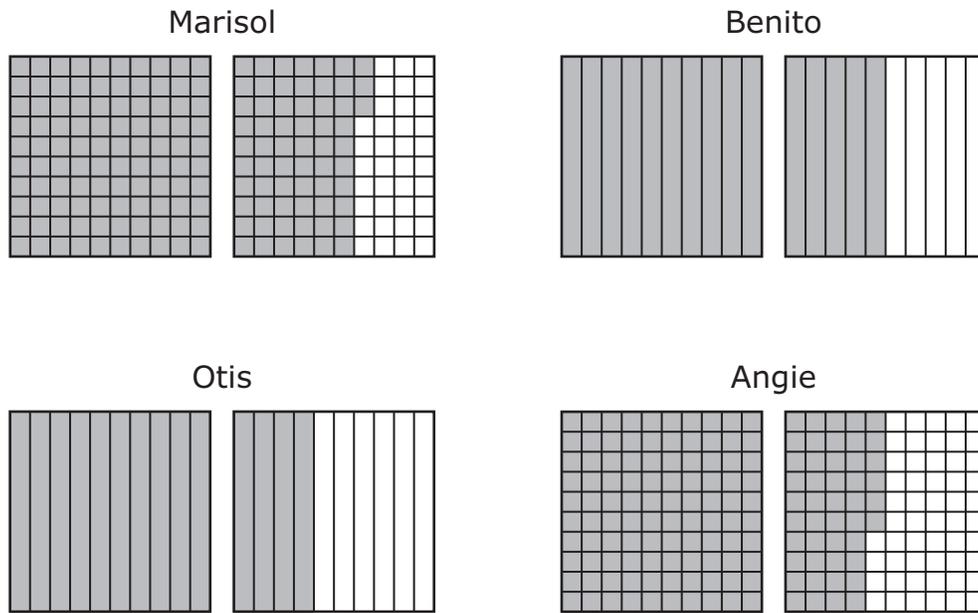
Which list shows these distances in order from greatest to least?

A 1.46 m   1.5 m   1.4 m   1.63 m

B 1.63 m   1.46 m   1.5 m   1.4 m

C 1.4 m   1.46 m   1.5 m   1.63 m

D 1.63 m   1.5 m   1.46 m   1.4 m

---

28 Diane worked 18 hours each week during the summer. She worked a total of 8 weeks and earned $9 an hour. How much money did Diane earn during the summer?

F $306

G $1,296

H $156

J $1,386

29 Some people borrow money to buy cars. They have to make car payments to pay back the money they borrowed. What kind of expenses are most car payments?

  A Variable expenses, because the amount usually changes every month

  B Variable expenses, because the payment is not due every month

  C Fixed expenses, because the amount is usually the same every month

  D Fixed expenses, because the car is usually paid for after one month

---

30 There are 1,092 people who work in an office building. The building has 4 floors, and the same number of people work on each floor. How many people work on each floor?

  F 273

  G 223

  H 373

  J 348

31 Each picture below represents a different amount of money. In which amount of money does the digit 8 represent eight cents?

A

B

C

D
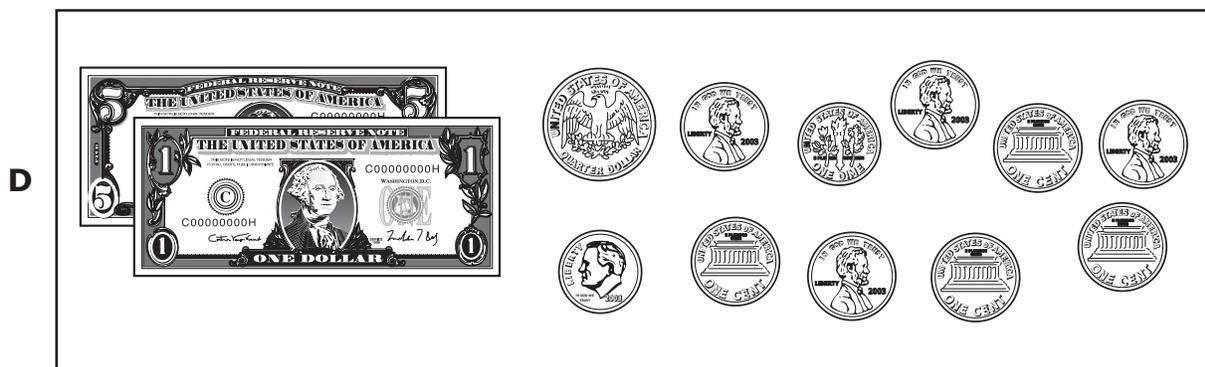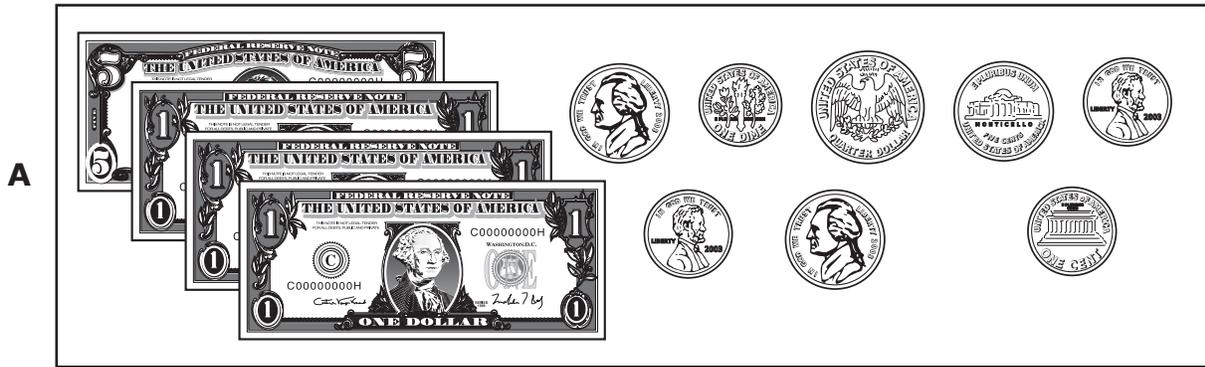
32 Jorge swam a total of 173 minutes during 3 days. He swam the same number of minutes each day. Which of the following is the best estimate of the number of minutes Jorge swam each day?

F 60

G 40

H 20

J 30

33 A rug shaped like a rectangle has a width of 3 m. The length of the rug is 2 m greater than its width. What is the perimeter of the rug in meters?
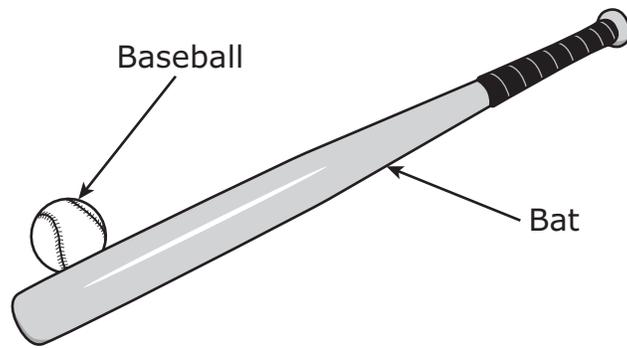
A 10 m

B 16 m

C 8 m

D 15 m

34 Jana bought 1 hat and 2 skirts. The hat cost $28.53, and the skirts cost $15.88 each. What was the total cost in dollars and cents of the items Jana bought?

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

35 Garrett has a baseball and a bat like the ones shown in the picture.

Baseball

Bat

Which measurement best describes the length of the bat?

A 35 in.

B 35 m

C 35 ft

D 35 mm

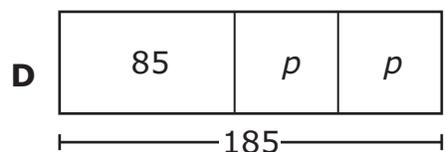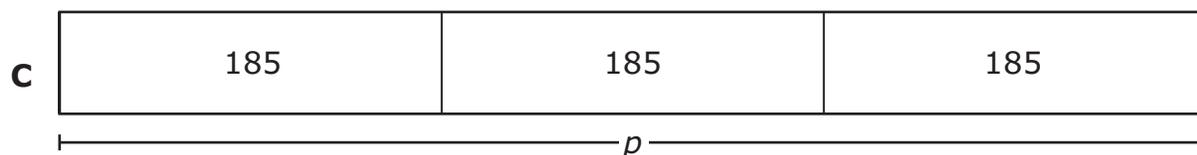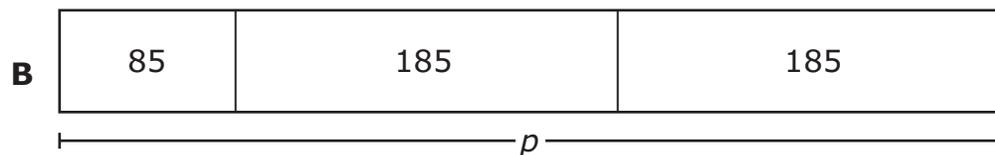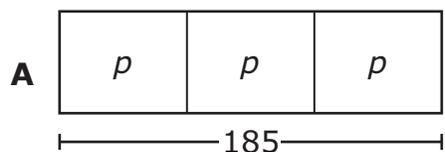**36** Mrs. Briones has a pitcher that contains $3\frac{75}{100}$ quarts of lemonade. Which decimal is equivalent to this number?

F 3.075

G 3.75

H 0.375

J 300.75

GO ON

37 Sabra read a total of 185 pages in three days.

- On the first day, she read 85 pages.
- On the second and third days, she read the same number of pages.

Which diagram shows a way to find p, the number of pages Sabra read on the third day?

A

p	p	p

├────────185────────┤

B

85	185	185

├──────────────p──────────────┤

C

185	185	185

├──────────────p──────────────┤

D

85	p	p

├────────185────────┤

---

38 Tyra opened a new bag of birdseed and filled 3 bird feeders. She put 2,500 grams of birdseed into each feeder. There were 1,500 grams of birdseed left in the bag. What was the mass of the bag of birdseed in kilograms before Tyra opened it?
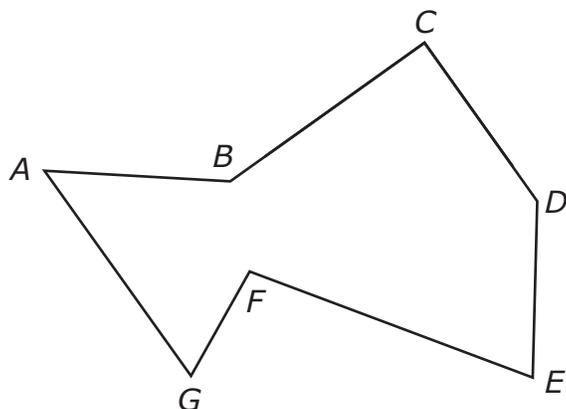
F 4 kg

G 4,000 kg

H 9 kg

J 9,000 kg

39 Mrs. Bernstein used parts of two identical rolls of paper to wrap packages. The models are shaded to represent the part of each roll of paper she used.

First roll

Second roll

What fraction of the rolls of paper did Mrs. Bernstein use to wrap the packages?

A $\frac{1}{6}$

B $1\frac{3}{6}$

C $\frac{3}{6}$
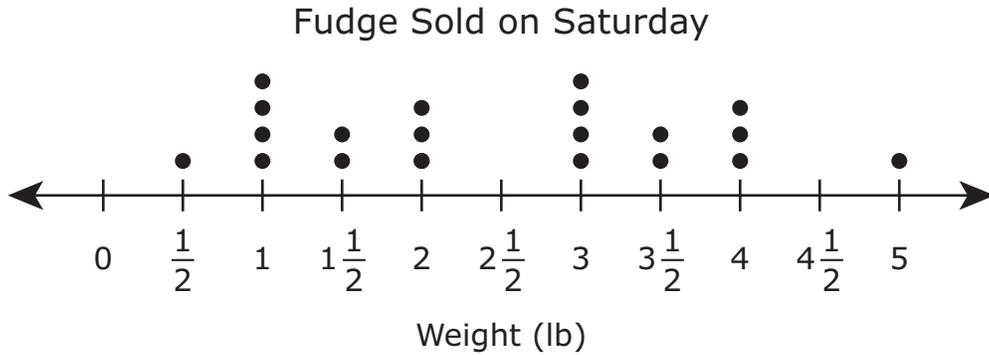
D $1\frac{1}{6}$

40 A figure is shown below.

Which two line segments appear to be perpendicular?

F Line segments *AG* and *CD*

G Line segments *BC* and *CD*

H Line segments *DE* and *EF*

J Line segments *AG* and *FG*

41 A candy store sells fudge by the pound. The dot plot shows the number of customers who bought different numbers of pounds of fudge on Saturday.

Fudge Sold on Saturday

Weight (lb)

Which frequency table represents the same data shown on the dot plot?

A

Fudge Sold on Saturday

Weight (lb)	$\frac{1}{2}$	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5
Tally	I	IIII	II	III		IIII	II	III		I

B

Fudge Sold on Saturday

Weight (lb)	1	4	2	3	0	4	2	3	0	1
Tally	I	IIII	II	III		IIII	II	III		I

C

Fudge Sold on Saturday

Weight (lb)	$\frac{1}{2}$	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5
Tally	I	IIII	II	III	I	IIII	II	III	I	I

D

Fudge Sold on Saturday

Weight (lb)	$\frac{1}{2}$	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5
Tally	I	IIII	II	III	IIII	II	III	I		

42 In 2008 the total number of cell phone users in Indonesia was about 140,578,000. Which expression has the same value as 140,578,000?
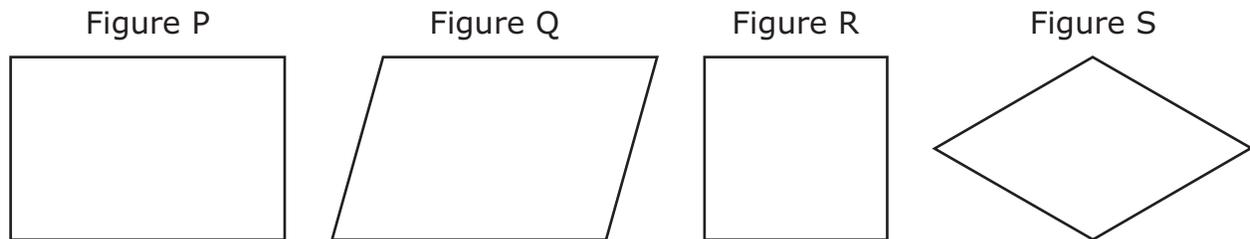
F $100,000,000 + 40,000,000 + 5,000,000 + 700,000 + 80,000$

G $100,000,000 + 40,000,000 + 500,000 + 70,000 + 8,000$

H $10,000,000 + 4,000,000 + 500,000 + 70,000 + 8,000$

J $100,000,000 + 40,000,000 + 500 + 70 + 8$

---

43 Four figures are shown.

| Figure P | Figure Q | Figure R | Figure S |

Which figures appear to be rectangles?

A Figures Q and S

B Figures R and S

C Figures P and R

D Figures P and Q

GO ON

44 Sergio completed $\frac{2}{3}$ of a project. Julius completed $\frac{4}{9}$ of an identical project. Each

student shaded a model to represent the fraction of the project he completed.

Which student completed more of his project?

F Sergio completed more, because

G Julius completed more, because

**H** Sergio completed more, because


J Julius completed more, because

45 Mr. Conrad makes chess pieces. A chess club ordered a set of chess pieces for each of its members.

- Each set has 32 chess pieces.
- There are 27 members of the chess club.
- Mr. Conrad put these chess pieces in 6 boxes with the same number of pieces in each box.

How many chess pieces did Mr. Conrad put in each box?

A 864

B 192

C 354

D 144

46 Which angle has a measure closest to 30°?
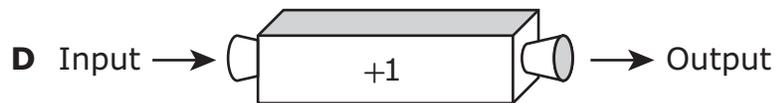
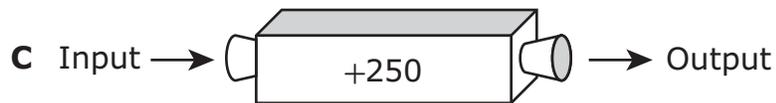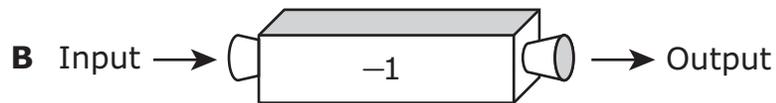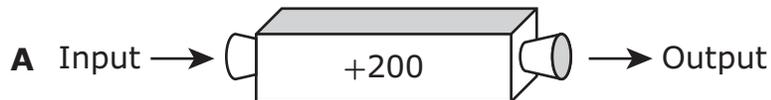**F**

G

H

J
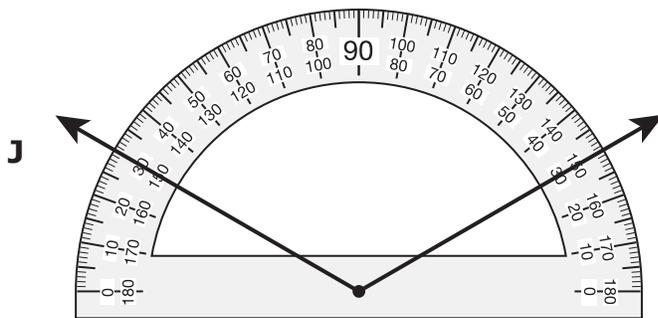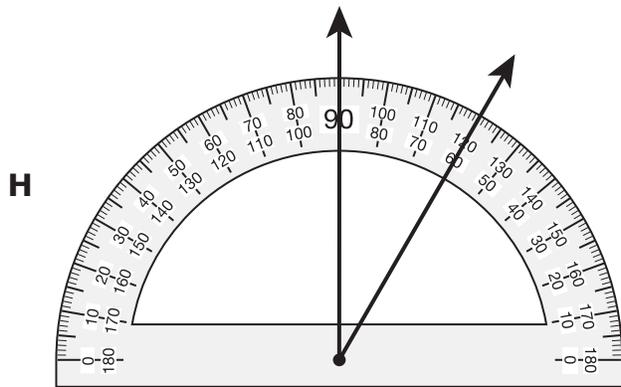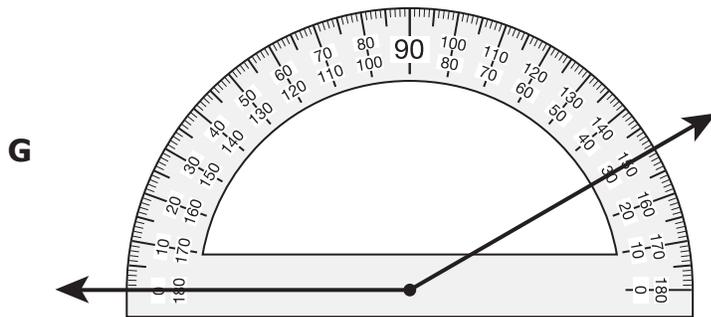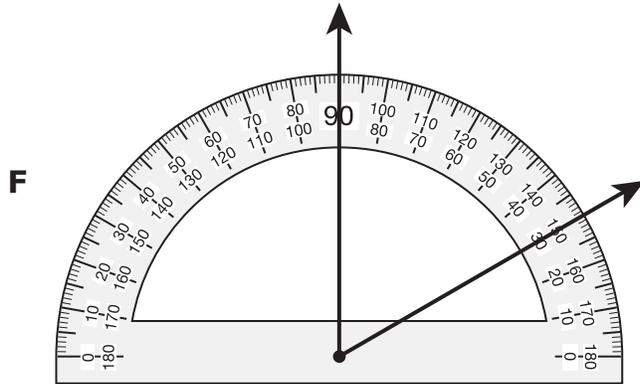
47 The table shows a relationship between the input numbers and the output numbers generated by a number machine.

Number Machine

Input	Output
1	251
2	252
3	253
4	254

Which number machine shows the same relationship as the one shown in the table?

A Input → [+200] → Output

B Input → [−1] → Output

C Input → [+250] → Output

D Input → [+1] → Output

48 Point X on the number line below represents the height of a puppy in centimeters.

What measurement does point X represent on the number line?

F 16.12 cm

G 17.2 cm

H 18.8 cm

J 17.8 cm

BE SURE YOU HAVE RECORDED ALL OF YOUR ANSWERS
ON THE ANSWER DOCUMENT.

STOP

STAAR
GRADE 4
Mathematics
May 2016