**Проверочная работа по МАТЕМАТИКЕ**

**7 КЛАСС**

**Пояснение к проверочной работы**

На выполнение работы по математике базового уровня отводится два урока (не более 45 минут каждый). Работа состоит из двух частей и включает в себя 17 заданий.

Обе части работы могут выполняться в один день с перерывом не менее 10 минут или в разные дни.

При выполнении работы не разрешается пользоваться учебниками, рабочими тетрадями, справочниками, калькулятором.

При необходимости можно пользоваться черновиком. Записи в черновике проверяться и оцениваться не будут.

**В образце представлено по несколько примеров заданий 1, 2 и 16. В реальных вариантах проверочной работы на каждую из этих позиций будет предложено только**

**одно задание.**

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*Таблица для внесения баллов участника*\*

Часть

1



Номер

задания

8

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10

11

9

(1)

9

1

2

(1)

2

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3

4

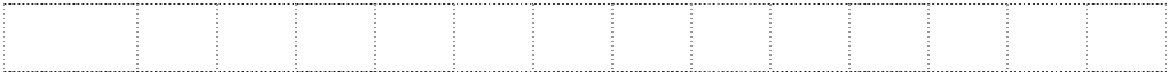
5

6

7



Баллы



Часть

2



Номер

задания

13

14

15

12

16

17

Сумма

баллов

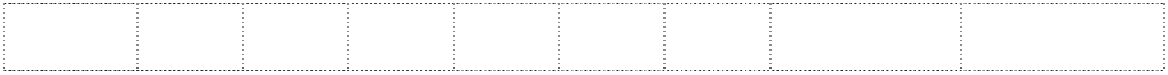
Отметка

за

работу



Баллы



**Инструкция по выполнению заданий части 1 проверочной работы**

На выполнение заданий части 1 проверочной работы по математике отводится один урок (не более 45 минут). Часть 1 включает в себя 11 заданий.

Ответы на задания запишите в поля ответов в тексте работы. В задании 6 нужно отметить точку на числовой прямой, в задании 9.2 нужно выполнить построения на графике. Если Вы хотите изменить ответ, зачеркните его и запишите рядом новый.

При выполнении работы не разрешается пользоваться учебниками, рабочими тетрадями, справочниками, калькулятором.

При необходимости можно пользоваться черновиком. Записи в черновике проверяться и оцениваться не будут.

Советуем выполнять задания в том порядке, в котором они даны. В целях экономии времени пропускайте задание, которое не удаётся выполнить сразу, и переходите к следующему. Если после выполнения работы у Вас останется время, то Вы сможете вернуться к пропущенным заданиям.

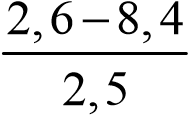
***Желаем успеха!***

**Часть 1**

Найдите значение выражения 2,64 : 2,2 − 0,5

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# ИЛИ

Найдите значение выражения  .

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**2**

**1**

Таблица содержит данные о росте учащихся класса.

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| Фамилия | Рост, см | Фамилия | Рост, см | Фамилия | Рост, см |
| Алексеев | 156 | Гетманов | 160 | Завидов | 163 |
| Андреева | 159 | Добромыслов | 156 | Коваль | 154 |
| Борисов | 162 | Евсеева | 1154 | Петровская | 149 |
| Вольский | 158 | Железов | 167 | Юсуфов | 165 |

1. Определите явно ошибочное значение (выброс), внесённое в эту таблицу.

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1. Удалите выброс и найдите размах оставшихся значений.

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# ИЛИ

Северо-Кавказский федеральный округ (СКФО) состоит из семи регионов. На диаграмме представлена численность населения в этих регионах по данным на 1 января 2022 г.

Кабардино-Балкарская

Республика

Карачаево

-

Черкесская

Республика

ЧеченскаяРеспублика

Ставропольский

край

РеспубликаСеверная

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Осетия – Алания

**2**

**3**

1. Определите, в каком из этих регионов наибольшая численность населения.

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1. Найдите примерную долю населения Чеченской Республики в общей численности населения СКФО. Ответ дайте в процентах.

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Трактор едет по дороге, проезжая 10 метров за каждую секунду. Выразите скорость трактора в километрах в час.

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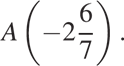
Катя младше Тани, но старше Даши. Ксюша не младше Даши. Укажите номера истинных утверждений.

1. Таня и Даша одного возраста.
2. Среди указанных девочек нет никого младше Даши.
3. Таня старше Даши.
4. Таня и Катя одного возраста.

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Найдите корень уравнения 2 ( 4+3*x*)=*x -*13.

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Отметьте на числовой прямой точку 

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Ответ:

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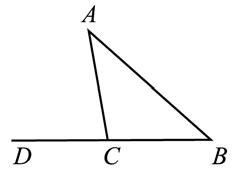
На клетчатой бумаге с размером клетки 1 1× отмечены три точки: *A*, *B* и *C* . Найдите расстояние от точки *A* до прямой *BC* .

*C*

*A*

*B*

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В треугольнике *ABC* угол *BAC* равен 40°, *АC CB*= . Найдите внешний угол при вершине *C* .

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Из пункта А в направлении пункта Б, расстояние между которыми равно 240 км, в 7 часов утра выехал велосипедист, а через некоторое время из пункта А в том же направлении выехал автомобиль. Доехав до пункта Б, автомобиль сделал остановку на 3 часа, а затем с той же скоростью поехал обратно.

На рисунке график движения велосипедиста обозначен цифрой 1, график движения автомобиля обозначен цифрой 2 и приведён не полностью.

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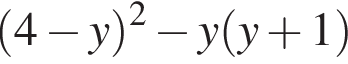
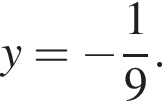
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1. Найдите, на каком расстоянии от пункта А автомобиль догнал велосипедиста.

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1. На том же рисунке достройте график движения автомобиля до момента возвращения в пункт А.

Найдите значение выражения при 

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На рисунке показан абажур, изготовленный из стальной проволоки. Какое наименьшее количество кусков проволоки нужно, чтобы изготовить абажур, показанный на рисунке?

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**11**

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**Инструкция по выполнению заданий части 2 проверочной работы**

На выполнение заданий части 2 проверочной работы по математике отводится один урок (не более 45 минут). Часть 2 включает в себя 6 заданий.

Во всех заданиях запишите решение и ответ в указанном месте. Если Вы хотите изменить ответ, зачеркните его и запишите рядом новый.

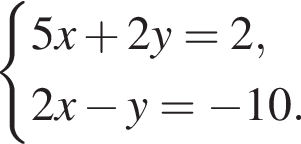
При выполнении работы не разрешается пользоваться учебниками, рабочими тетрадями, справочниками, калькулятором.

При необходимости можно пользоваться черновиком. Записи в черновике проверяться и оцениваться не будут.

Советуем выполнять задания в том порядке, в котором они даны. В целях экономии времени пропускайте задание, которое не удаётся выполнить сразу, и переходите к следующему. Если после выполнения работы у Вас останется время, то Вы сможете вернуться к пропущенным заданиям.

***Желаем успеха!***

**Часть 2**

Решите систему уравнений 

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**12**

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| Решение. | | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Ответ: | | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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Хоккейные коньки в апреле стоили 4500 руб. В мае цену снизили на 20 %. В октябре цену повысили на 10 %. Сколько стали стоить коньки?

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**13**

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| Решение. | | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Ответ: | | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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Параллельные прямые *AB* и *CD* пересекают прямую *EF* в точках *K* *F* и *M* соответственно. Угол *FMD* равен 28°. Найдите угол *AKM* . *CD*

*A K B*

*M*

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**14**

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| Решение. | | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Ответ: | | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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На первом участке собрали по 420 тонн огурцов с каждого гектара; на втором – по 360 тонн, а на третьем – по 520 тонн. Площадь первого участка равна 20; второго – 55; третьего – 25 гектаров. Сколько тонн огурцов собрали в среднем с одного гектара на всех трёх участках?

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**15**

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| Решение. | | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Ответ: | | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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В треугольнике *ABC* проведена биссектриса *CE* . Найдите величину угла *BCE* , если ∠*BAC* = 46° и∠*ABC* = 78° .

# ИЛИ

В треугольнике *АВС* на стороне *АС* отметили произвольную точку *М* . В треугольнике

*ABM* провели биссектрису *MK* . В треугольнике *СВМ* построили высоту *МР* . Угол *KMP* равен 90°, *CM* =12. Найдите *ВM* .

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**16**

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| Решение. | | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Ответ: | | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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Задумали трёхзначное число, последняя цифра которого не равна нулю. Из него вычли трёхзначное число, записанное теми же цифрами в обратном порядке. Получили число 792. Найдите все числа, обладающие таким свойством.

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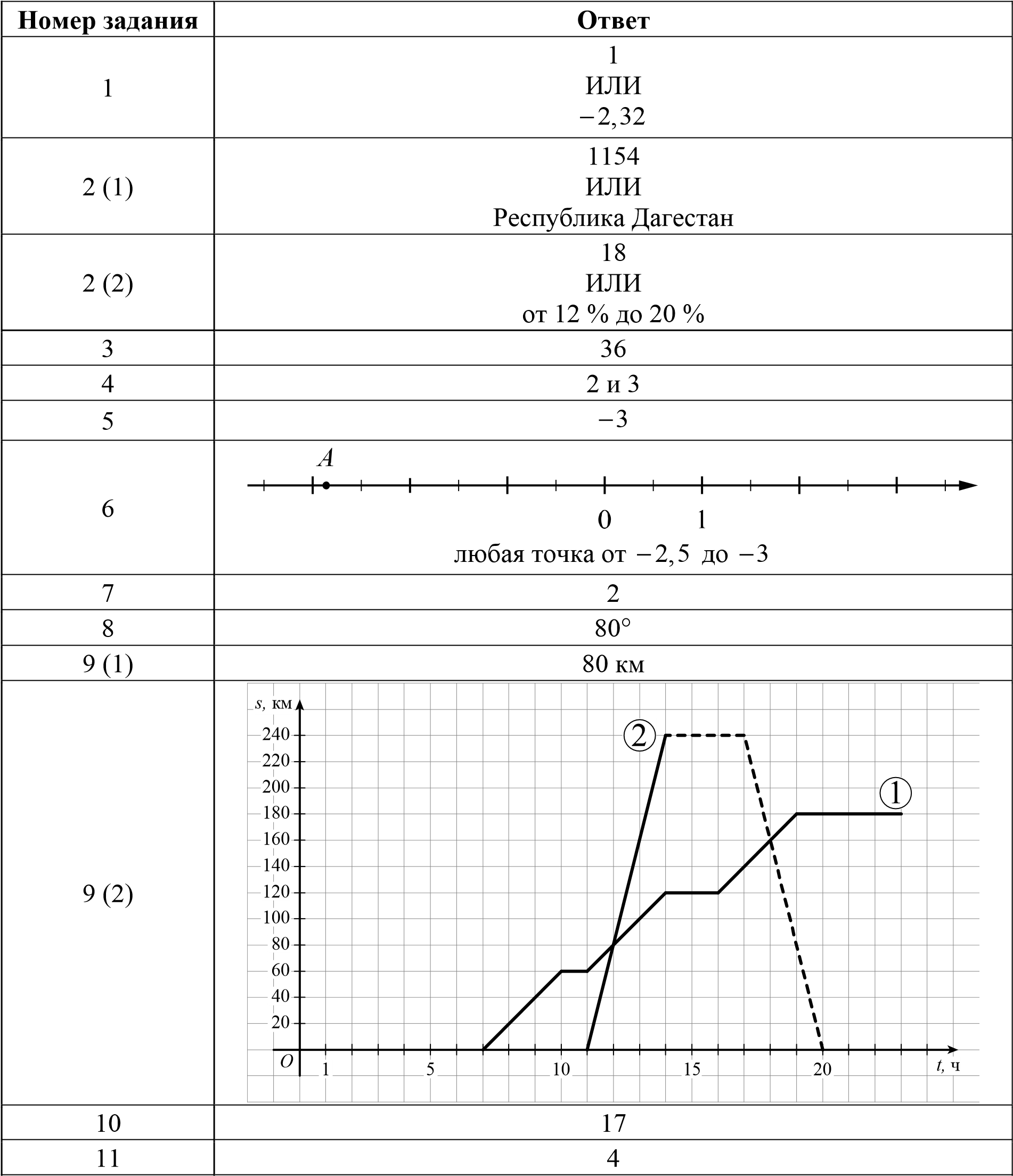
**17**

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| Решение. | | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Ответ: | | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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**Система оценивания проверочной работы**

**Часть 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Номер задания | 1 | 2 (1) | 2 (2) | 3 | 4 | 5 | 6 | 7 | 8 | 9 (1) | 9 (2) | 10 | 11 | Итого |
| Баллы | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 13 |



**Система оценивания проверочной работы**

**Часть 2**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Номер задания | 12 | 13 | 14 | 15 | 16 | 17 | Итого |
| Баллы | 2 | 2 | 2 | 2 | 2 | 2 | 12 |

Решите систему уравнений

5*x* + =2*y* 2,



2*x* − =−*y* 10.

**12**

**13**

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| **Решение и указания к оцениванию** | **Баллы** |
| Решение.  5*x* + 2 2( *x* +10)= 2, 9*x* =−18, *x* =−2,      *y* = +2*x* 10; *y* = +2*x* 10; *y* = 6.    **Возможна другая последовательность действий.**    Ответ: (−2; 6) |  |
| Обоснованно получен верный ответ | 2 |
| Дан верный ответ, но решение недостаточно обосновано.  ИЛИ  Ход решения верный, но допущена вычислительная ошибка | 1 |
| Решение не соответствует ни одному из критериев, перечисленных выше | 0 |
| *Максимальный балл* | *2* |

Хоккейные коньки в апреле стоили 4500 руб. В мае цену снизили на 20 %. В октябре цену повысили на 10 %. Сколько стали стоить коньки?

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| **Решение и указания к оцениванию** |  | **Баллы** |
| Решение.  После снижения цены коньки стали стоить: | рублей. |  |
| После повышения цены коньки стали стоить:  **Возможна другая последовательность действий.**    Ответ: 3960 рублей | рублей. |  |
| Обоснованно получен верный ответ |  | 2 |
| Дан верный ответ, но решение недостаточно обосновано.  ИЛИ  Ход решения верный, но допущена вычислительная ошибка |  | 1 |
| Решение не соответствует ни одному из критериев, перечисленных выше | | 0 |
| *Максимальный балл* | | *2* |

**14** Параллельные прямые *AB* и *CD* пересекают прямую *EF* в точках *K* *F* и *M* соответственно. Угол *FMD* равен 28°. Найдите угол *AKM* . *CD*

*A K B*

*M*

*E*

|  |  |
| --- | --- |
| **Решение и указания к оцениванию** | **Баллы** |
| Решение.  ∠*AKM* +∠*KMC* =180°; ∠*FMD* = ∠*KMC* ; ∠*AKM* =180°−∠*KMC* =152°.    **Возможна другая последовательность действий.**    Ответ: 152° |  |
| Обоснованно получен верный ответ | 2 |
| Дан верный ответ, но решение недостаточно обосновано.  ИЛИ  Ход решения верный, но допущена вычислительная ошибка | 1 |
| Решение не соответствует ни одному из критериев, перечисленных выше | 0 |
| *Максимальный балл* | *2* |

**15**

На первом участке собрали по 420 тонн огурцов с каждого гектара; на втором – по 360 тонн, а на третьем – по 520 тонн. Площадь первого участка равна 20; второго – 55; третьего – 25 гектаров. Сколько тонн огурцов собрали в среднем с одного гектара на всех трёх участках?

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| **Решение и указания к оцениванию** | **Баллы** |
| Решение.  Со всех трёх участков собрали: 420 20⋅ +360 55⋅ +520 25⋅ = 41200 тонн огурцов.  Общая площадь трёх участков: 20 55 25 100+ + = гектаров.  Средняя урожайность: 41200:100 = 412 тонн огурцов с гектара.    **Возможна другая последовательность действий.**    Ответ: 412 тонн |  |
| Обоснованно получен верный ответ | 2 |
| Дан верный ответ, но решение недостаточно обосновано.  ИЛИ  Ход решения верный, но допущена вычислительная ошибка | 1 |
| Решение не соответствует ни одному из критериев, перечисленных выше | 0 |
| *Максимальный балл* | *2* |

**16** В треугольнике *ABC* проведена биссектриса *CE* . Найдите величину угла *BCE* , если ∠*BAC* = 46° и∠*ABC* = 78° .

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| **Решение и указания к оцениванию** | **Баллы** |
| Решение.  ∠*ACB* =180°−46°−78° = 56° .  Поскольку *CE* – биссектриса, ∠*BCE* = 56 :2° = 28°.    **Возможна другая последовательность действий.**    Ответ: 28° |  |
| Обоснованно получен верный ответ | 2 |
| Дан верный ответ, но решение недостаточно обосновано.  ИЛИ  Ход решения верный, но допущена вычислительная ошибка | 1 |
| Решение не соответствует ни одному из критериев, перечисленных выше | 0 |
| *Максимальный балл* | *2* |

# ИЛИ

В треугольнике *АВС* на стороне *АС* отметили произвольную точку *М* . В треугольнике

**16**

*ABM* провели биссектрису *MK* . В треугольнике *СВМ* построили высоту *МР* . Угол *KMP* равен 90°, *CM* =12. Найдите *ВM* .

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| **Решение и указания к оцениванию** | **Баллы** |
| Решение. *B*  *P*  *K*  Пусть ∠*AMK* = ∠*KMB* = α, тогда ∠*ВМР* = 90°−α . ∠*РМС* =180°−∠*АМK* −∠*KМP* = 90°−α .  Получаем ∠*ВМР РМС*= ∠ . Треугольники *ВМР* и *CMP* равны. Значит, *BM CM*= =12 .    **Возможна другая последовательность действий.**    *A*  Ответ: 12 *M C* |  |
| Обоснованно получен верный ответ | 2 |
| Дан верный ответ, но решение недостаточно обосновано | 1 |
| Решение не соответствует ни одному из критериев, перечисленных выше | 0 |
| *Максимальный балл* | *2* |

**17** Задумали трёхзначное число, последняя цифра которого не равна нулю. Из него вычли трёхзначное число, записанное теми же цифрами в обратном порядке. Получили число 792. Найдите все числа, обладающие таким свойством.

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| **Решение и указания к оцениванию** | **Баллы** |
| Решение.  Пусть задано число *abc* =100⋅*a* +10⋅*b c*+ . Из него вычли число 100⋅ +*c* 10⋅*b a*+ .  100⋅*a* +10⋅*b c*+ −(100⋅ +*c* 10⋅*b a*+ ) = 99⋅*a* −99⋅*c* = 99(*a c*− ) = 792 99 8= ⋅ .  Следовательно, *a c*− = 8. Поскольку *a* ≠ 0 и *c* ≠ 0, получаем *a* = 9 и *c* =1.  Значит, было задано одно из чисел: 901, 911, 921, 931, 941, 951, 961, 971, 981 или 991.    **Возможна другая последовательность действий.**    Ответ: 901, 911, 921, 931, 941, 951, 961, 971, 981 или 991 |  |
| Обоснованно получен верный ответ | 2 |
| Дан верный ответ, но решение недостаточно обосновано.  ИЛИ  Ход решения верный, но допущена арифметическая ошибка | 1 |
| Решение не соответствует ни одному из критериев, перечисленных выше | 0 |
| *Максимальный балл* | *2* |

**Система оценивания выполнения всей работы**

Максимальный первичный балл за выполнение работы — **25**.

*Рекомендуемая таблица перевода баллов в отметки по пятибалльной шкале*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Отметка по пятибалльной шкале** | **«2»** | **«3»** | **«4»** | **«5»** |
| Первичные баллы | 0–6 | 7–12 | 13–18 | 19–25 |